THE PAPER INDUSTRY
and PAPER WORLD
AN EDUCATIONAL NEWS MAGAZINE — DECEMBER, 1938

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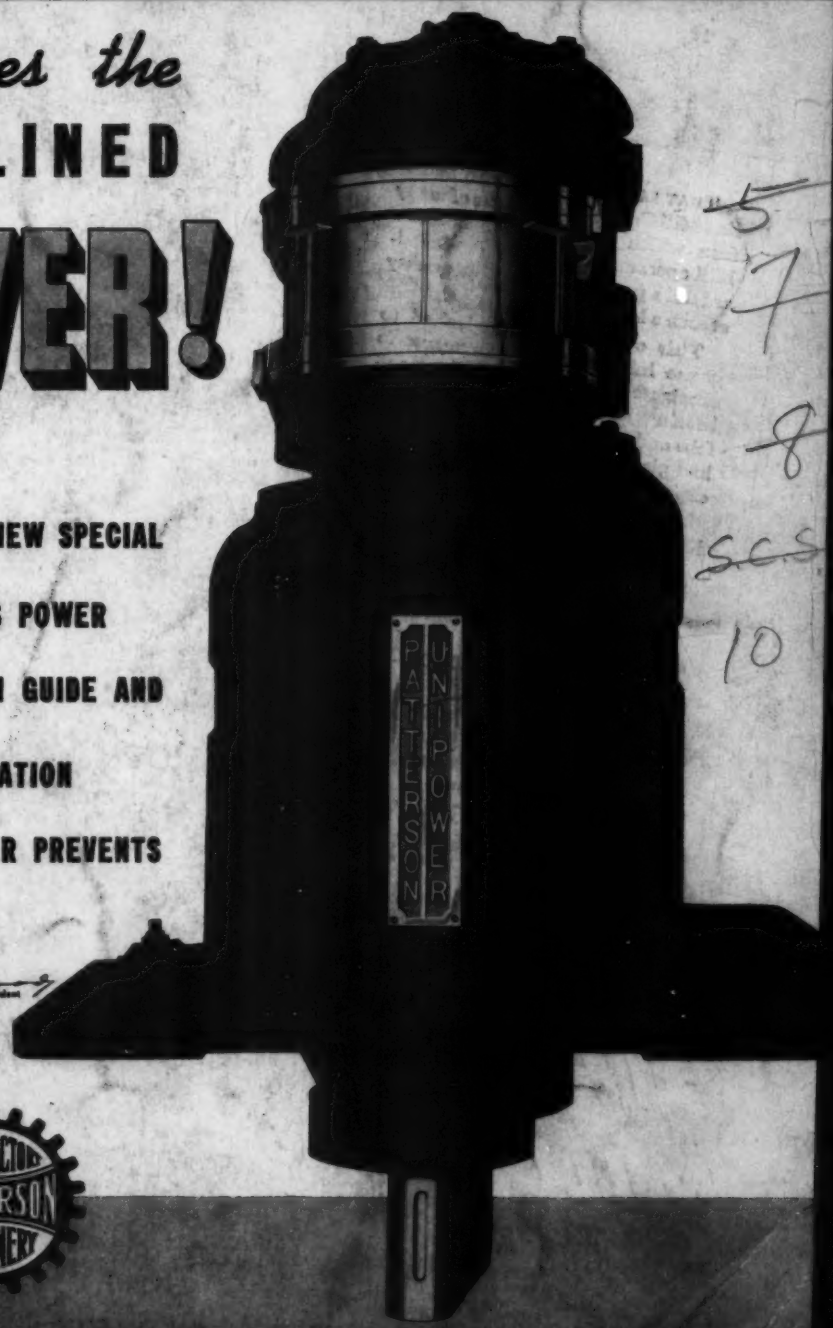

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President

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35% LESS GREASE ON DRYER ROLLS

● THAT SAVING of 35% with Stanolind Mill Grease was only one of many facts which prompted a Minnesota Mill operator to ask "How can Standard sell a product of such high quality at such a low price?"

This operator had switched to grease lubrication in an attempt to eliminate oil leakage on dryer roll bearings and the resultant damage to felts and paper. Various greases tried had glazed and carbonized, were too expensive, or too high in consumption.

Then a Standard Lubrication Engineer introduced Stanolind Mill Grease. Not only was the leakage trouble eliminated and the total consumption of grease reduced, but the operator found that Stanolind actually cost less than any of the conventional lubricants he had tried.

A Standard Lubrication Engineer could pay his way on your payroll in the saving he makes in lower lubricating costs-per-ton. But you can have this service at *no cost* to you if you are in the Middle West. Just write 910 S. Michigan Ave., Chicago, Ill., for the Engineer nearest your plant.

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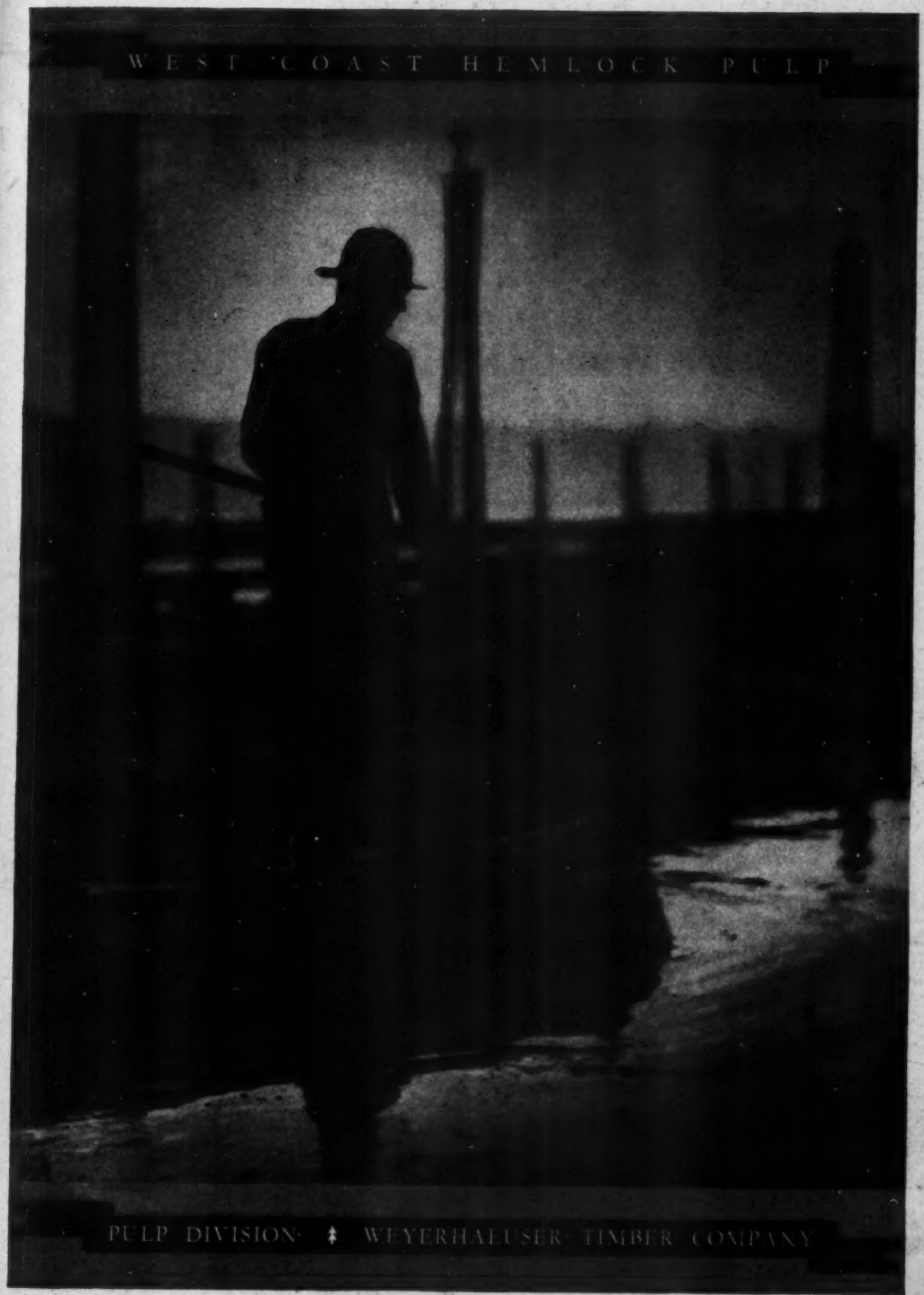
STANOLIND MILL GREASE

STANDARD OIL COMPANY (INDIANA)

LUBRICATION ENGINEERING — THE RIGHT LUBRICANT • PROPERLY APPLIED TO REDUCE COSTS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PULP DIVISION ‡ WEYERHAEUSER TIMBER COMPANY

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I WANT A JOB on your paper machines. I'll carry the load, remove the water, give you the finish you want. And because I can stay on the job *longer*, work *faster*, turn out *more* paper, I'll cost you less.

Hundreds of leading papermakers in America know me and my work. I've been serving them for 68 years. I'm working for them now, and I'm ready to work for you.

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OPACITY—WHITENESS—BRIGHTNESS

"ALL PURPOSE" PAPERS *now are* OPAQUE, WHITE *and* BRIGHT

...*because* TITANOX PIGMENTS *make them so!*

INTRODUCTION of TITANOX pigments as a filler in utility paper manufacture has produced a new series of "all purpose" papers that are finding favor everywhere.

These papers are opaque, clean and brilliant as a result of the exceptional opacity, whiteness and brightness of TITANOX pigments. They have excellent printability and strength. They contrast in every way with the often dull, discolored and transparent papers formerly in use. And such papers are very economical to produce since only a small amount of TITANOX pigment is necessary as a filler.

There is an increasing demand in modern business for these modern utility papers. Because of their extremely high opacity, color and brightness, they are widely used for annual reports, booklets of all kinds (including catalogues, house organs, financial prospectuses, etc.) broadsides, calendars, maps, circulars and all types of advertising.

TITANOX PIGMENTS have unique properties of high opacity, whiteness and brightness. They are extremely fine, chemically inert and do not react with any other constituents of paper. Where minimum loading is required, TITANOX-A (Titanium Dioxide) is recommended. Where higher loading is permissible TITANOX-B-30 is often used.

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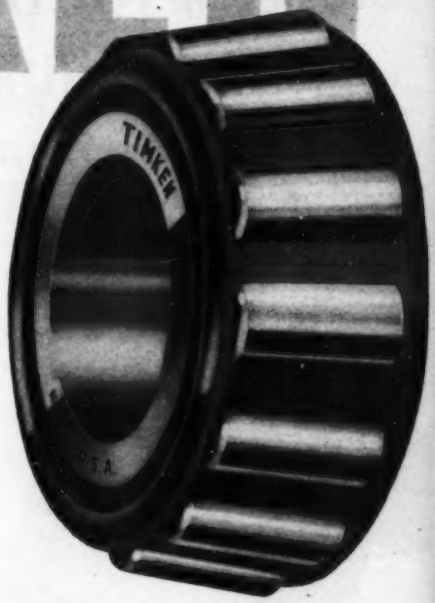
"TIMKEN"

Another Word For CONFIDENCE



Confidence in the manufacturer as well as in the product is a matter of first importance when selecting paper making equipment.

Paper mill operators and leading paper equipment manufacturers have confidence in The Timken Roller Bearing Company as a supplier who appreciates their engineering, construction and operating problems and who spares no expense to fill their needs reliably and consistently. We in turn appreciate this confidence and take every practical step to strengthen it.

As to background, The Timken Roller Bearing Company has a record of 40 years of continuous engineering development and experience in the manufacture and application of tapered roller bearings.

This company has its own steel mills which can produce 30,000 tons of high grade electric furnace and open hearth alloy steel per month. It has the largest electric furnace capacity in the steel industry and its equipment includes the world's largest electric furnace (100 tons of steel per heat).

Our research and testing facilities include one of the largest, most modern and most complete physical testing laboratories in the world. Timken Bearing success is founded upon FACTS.

TIMKEN Bearings are used on all locomotives and many of the cars of the new 20th CENTURY LIMITED

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Manufacturers of TIMKEN Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; TIMKEN Alloy Steels and Carbon and Alloy Seamless Tubing; TIMKEN Rock Bits; and TIMKEN Fuel Injection Equipment.

TIMKEN
TAPERED ROLLER BEARINGS

THE PAPER INDUSTRY and PAPER WORLD

VOLUME 20 NUMBER 9 DECEMBER, 1938

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Dump in the dirtiest of mixed papers and out comes the stock completely free of all foreign materials and uniformly and thoroughly pulped. Fully automatic.

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SHARTLE BROS.

"Build a better mousetrap and the world will beat a path to your door." The standard of excellence Emerson had in mind is the same standard so characteristic of Shartle products . . . their agi-flo pumps, their breaker beaters, their famed Tugboat pulpers. All are highly efficient . . . all possess exclusive advantages. • Shartle products . . . like those made by Black-Clawson . . . are outstanding because they are constantly being improved. It's to your advantage to find out just how outstanding.

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Circulating oiling systems keep clean of deposits when filled with Texaco Oils of the Ursa Series.

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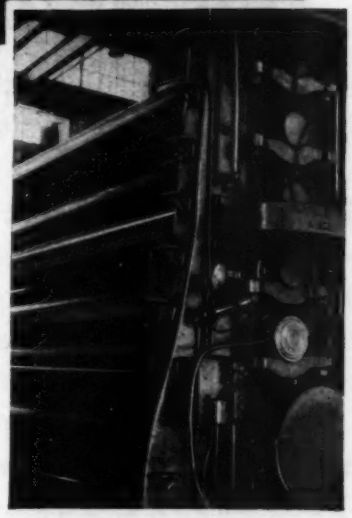
Calender stacks keep cool when Texaco Ursa is the lubricant. Filtered, Ursa stays in the system months on end.



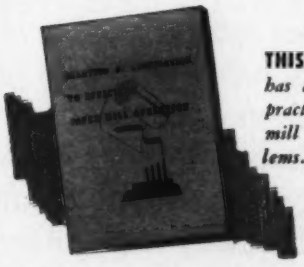
SHUTDOWNS TO CLEAN the sludgy deposit out of the oil lines were altogether too frequent, in a certain paper mill in the South. (Name upon request.)

But there have been no such shutdowns for the past five years . . . the oil flowing through these lines has been Texaco Ursa.

Texaco Ursa Oil keeps anti-friction bearings at their best. It leaves an extremely small amount of carbon residue, resists break-down under heat and pressure, and flushes the bearings of accumulations with cool, clean oil.

Texaco lubrication engineers are available to aid you in getting trouble-free service from Texaco Lubricants. 2186 Texaco warehouses assure you of prompt delivery. To order, phone the nearest or write:

The Texas Company, 135 East 42nd St., New York City.



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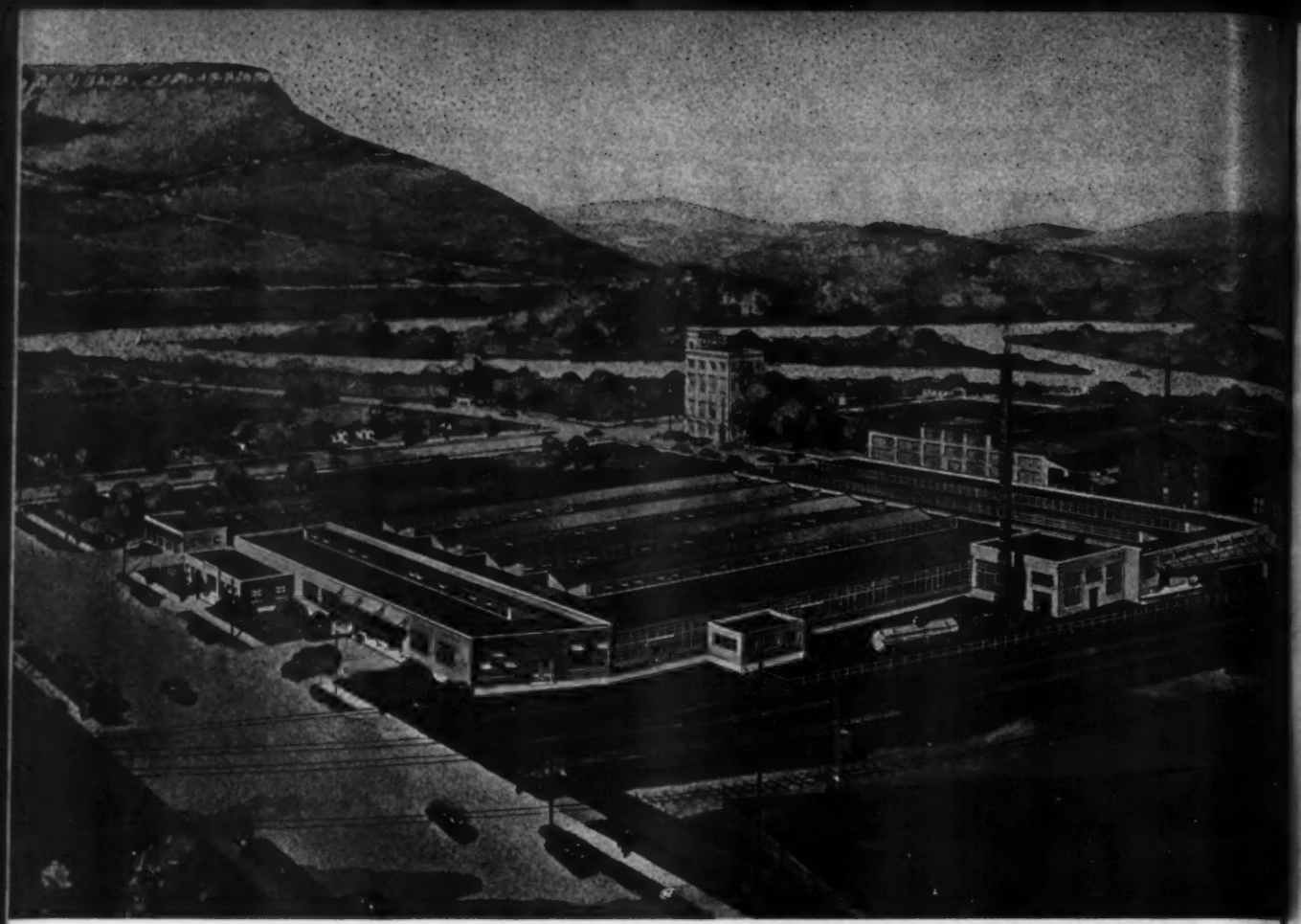
FOR CIRCULATING SYSTEMS



New Box Plant under Construction at Chattanooga, Tennessee for STAR BOX AND PRINTING COMPANY.

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The careful locating and planning of a new plant at the outset is a good way to insure its profit. With twenty years experience in the paper industry, we investigate sites, develop plot plans, make production layouts, and estimate production and construction costs. We design, build, and equip your plant complete, including power house, to meet your requirements and approval, and we make it operate to your satisfaction before we leave. You can get our preliminary recommendations and estimates, made promptly, accurately, and cheerfully, without cost or obligation to you, if you will communicate with our Cleveland or New York Office.

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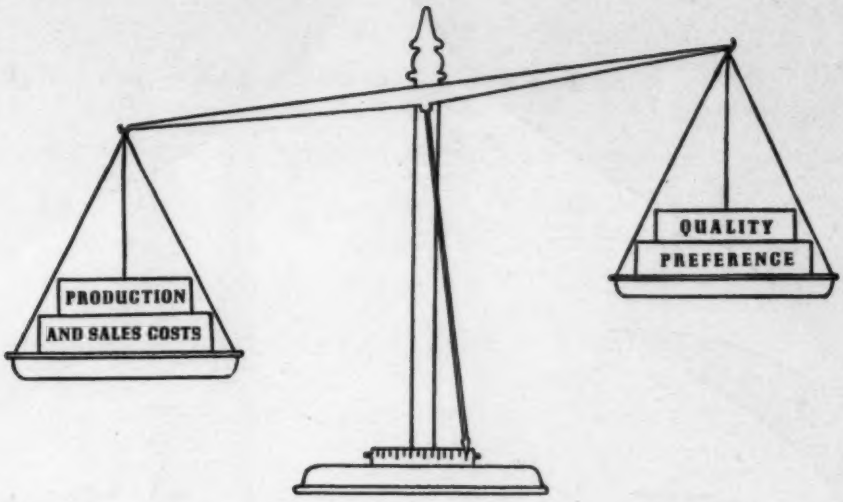

A logical step toward balancing this scale is to remove from your entire system all traces of dirt, scale and rotted stock accumulated there

The Whirlflex •••

100% Mechanical Cleaner combining positive electric power plus flexibility, has been designed to meet, and is meeting, this problem economically.

THIS EQUIPMENT OFFERS SAVINGS AND ADVANTAGES YOU CAN'T AFFORD TO OVERLOOK

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A Christmas Wish

Whatever the past year has brought us that is pleasing or disappointing, it has been nevertheless a year of experience and progress. The happiness that has been ours in 1938 can be ours every year, and this radiance will outshine the shadows of an occasional cloud. The Publisher of "The Paper Industry and Paper World" and his staff extend to all the Greetings of the Season. May each of you enjoy the very nicest Christmas you have ever had and may next year usher in a new wave of success and prosperity which will more than fulfill your expectations.

TRADE WINDS

SOUTHLAND PAPER MILLS OBTAINS R. F. C. LOAN

A FIVE-MILLION dollar investment in a mill to make newsprint in Texas will be effective as soon as the Southland Paper Mills, Inc., is able to sell stock to the amount of $1,615,000, much of which is to be sold to non-newspaper publisher investors.

This commercial organization, the first of its kind in the South, has secured a promise of a loan from the Reconstruction Finance Corporation of $3,425,000, and has, on November 29 at Washington, registered with the Securities and Exchange Commission its plan to sell stock to the amount of $1,615,000.

The paper mill is to cost $3,750,000, and other funds to be raised will be for $400,000 for engineer's fee and field, administration and legal expenses, and $890,000 for working capital.

The new paper company was formed in June of this year, with the following officers and directors: President, E. L. Kurth, Lufkin, Texas; vice-president, Arthur Temple, of Lufkin; secretary, S. W. Henderson, Jr., Lufkin; treasurer, Albert Newcombe, New York City. Directors—Messrs. Kurth, Temple and Newcombe, and E. M. Dealey of the Dallas News; E. K. Gaylord, of the Oklahoma City Oklahoman; Paul Sanderson, of Lufkin, and Alex F. Weisberg, of Dallas.

Closely associated in the new enterprise is the well-known paper house of Perkins-Goodwin Company, New York, which holds 42,916 shares of the authorized common stock of 500,000 shares. These shares were issued in full payment for past and future services by Perkins-Goodwin.

The company had issued stock in payment for 108,000 acres of land sold by the Angelina County Lumber Company, Southern Pine Lumber Company, Texas Long Leaf Lumber Company, and W. T. Carter and Brother Company.

Stock has also been issued in payment for a half interest in the Angelina and Neches River Railroad Company, a thirty-mile line connecting the proposed mill with the Southern Pacific, and the St. Louis and Southwestern. Short spurs will connect with the Missouri Pacific and Santa Fe lines.

Registered stock will be issued to newspaper publishers in units of one share of preferred and one of common, at $20 per unit, payable either when called for by the directors, or in three installments, when the mill is started, one and two years thereafter. The second and third payments, however, are not collectible until $675,000 has been raised by sale of stock to non-newspaper publishers.

The United Gas Pipe Line Company will be offered 7,500 units at $20 each, the same price at which sales will be made to the public.

The R. F. C. loan provides that payments shall be made on the principal of the loan at the rate of $20,000 per month for five years beginning December 31, 1940, and $30,000 per month for another five years, the balance to be met at the end of that time.

The contract for erection of the mill has been let to Merritt, Chapman and Scott Corporation.

TRADE AGREEMENTS AFFECT INDUSTRY

Reciprocal Trade Agreements between the United States and Canada and the United States and Great Britain were signed November 17, by far the most sweeping of any of those yet signed. While the agreements with each nation were individual documents, they are mutually related. The agreement with Great Britain involves some 3,000 tariff items. The concessions made by the United States to Great Britain and Canada are automatically extended to every other nation except Germany, whether the United States has agreements with such other nations or not.

The most important item affecting the paper industry is the reduction of the duty rate, by the United States, on uncoated printing paper. This duty is reduced from ¼ cent per pound plus 10 per cent. ad valorem to ⅛ cent per pound plus 5 per cent. In the case of a paper with a foreign value of $50 per ton, for instance, the reduction would be from the former duty of $10 to $6.50 under the new provision. Tissue papers are subjects of concessions in both agreements, the duty on certain high-price tissues being reduced in the British agreement and on all low priced tissues in the Canadian agreement.

In addition to the specific concessions, Canada, under the new agreement, has removed the excise tax of 3 per cent on the duty paid value of all imports from the United States. Specific duty reductions were made by Canada on prepared roofing, wallboards, paperboards and fiber boards; electrical insulating pressboard (not less than .040 inch in thickness); paper hanging or wall papers; electric cable insulating paper and condenser paper; wrapping paper of all kinds not pasted, coated or embossed; coated, ruled and boxed paper, pads, etc.; papetries, envelopes and all manufactures of paper not otherwise provided for; paperboard containers, and pulp of wood of straw or of any other vegetable fiber.

◆

NEW PULP MILL PROPOSED FOR DUNCAN BAY, VAN.

Formal application for the right to harness Campbell River, a step in line with a proposal to erect a large pulp mill at Duncan Bay, Vancouver Island, has been made by the Deep River Development Corporation. The company has also filed an application with the government for the right to purchase land for a power site on Campbell River just below Elk Falls. Backed by United States capital, the company proposes to erect a dam to control the level of the lower Campbell River.

The company proposes to produce rayon pulp in the new plant. One

of the factors which will have to be considered, is the effect of the power development on the run of salmon in the Lower Campbell River, which is one of the popular sports fishing rivers on the Pacific Coast.

◆

1939 NEWSPRINT PRICES THE SAME

The annual question of newsprint prices for the coming year has been settled by the announcement of the International Paper Company that its price will be $50 per ton, the same as the present price, this being delivered at New York and other points carrying an equivalent freight rate from Canadian mills. Great Northern has announced a $48 price, this being the same that this and several other companies in the United States have held for the past year. If other companies follow the usual leadership, the price situation for 1939 will remain as it has been during 1938.

◆

CHERRY RIVER MAY CLOSE PULP MILL

Due to a shortage of spruce, the Cherry River Paper Company, Richwood, W. Va., may close its sulphite mill on January 1. It is hoped that the present supply will carry the plant until the first of the year, and if the supply can be replenished by that time, operations will continue as usual.

◆

NEW RUBBER-LINED TANKS AT ABITIBI

Three new rubber-lined retention tanks have recently been installed in the chlorinating section of the bleach plant of the Abitibi Power and Paper Company's Smooth Rock Falls Fibre Division, located at Smooth Rock Falls, Ontario.

These tanks, lined with three-sixteenths-inch thick Defiance hard rubber by the B. F. Goodrich Company of Canada, Ltd., have a nine-foot nominal inside diameter and an over-all height of 38 feet, 4 inches. The height of the conical section is 8 feet, 4 inches. The rubber lining was cured at thirty pounds internal steam pressure as tank design called for the hydrostatic pressure of a thirty-eight foot, four-inch head. The tanks, which are built of quarter-inch mild steel, were designed in four sections to facilitate installation.

◆

BOWATER-LLOYD-NEWFOUNDLAND HAVE AGREEMENT

Terms of an agreement between Newfoundland's Commission of Government and Bowater-Lloyd (Newfoundland), Ltd., in which the company will extend its Cornerbrook sulphite plant instead of building a mill in the heart of the heavily-timbered Gander Lake area, as sought by the Government, have just been announced by Honorable R. B. Ewbank, Commissioner of Natural Resources.

In exchange for rights to cut wood for export, the Bowater-Lloyd interests will establish facilities for increased pulp production at the Cornerbrook site, recently acquired from International Power and Paper Co. The Government will also grant the company certain concessions in tariffs, export duties, taxation and water power rights.

The Commissioner announced terms of the agreement, relating to operation of the Gander Lake timber limits, in a broadcast address. The limits were purchased from Reid-Newfoundland, Ltd., subject to approval by the Commission of Government.

Under the 99-year agreement, the company will extend the Cornerbrook plant, increasing the annual output by 30,000 tons by December, 1941. The increased production will be started as soon as economically possible. The company will cut for export in 1938-1939 a minimum of 50,000 cords of "unmanufactured" wood. Any shortage in this cut will make them liable to a penalty of 25 cents a cord. After extension of sulphite production facilities, the company may export two cords of pulpwood for every ton of paper manufactured in excess of the normal output.

Until the new plant has operated for a period of three years, the company may export 70,000 cords of wood annually. It will pay a royalty of 30 cents a cord on all exported raw timber, but will be exempted from export duties.

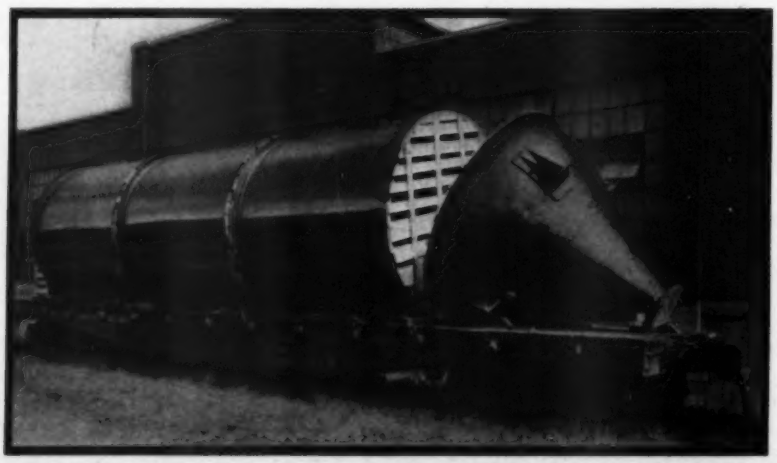
◆

MERSEY COMPANY MARKS 9TH YEAR

In honor of the ninth anniversary of the production of paper by the Mersey Paper Company, Liverpool, N. S., each employee with service of five or more years, was presented with one day's holiday with full pay. The days off are to be distributed equitably among the help qualified for the offer, so as not to interfere with manufacturing operations. This has been one of the most successful of Canadian paper-producing entities, with Colonel C. H. L. Jones, as president and general manager. Colonel Jones was identified with pulp and paper manufacturing in Ontario, before moving to Liverpool a decade ago, with the birth of the Mersey Paper Company.

It is estimated that about 60 per cent of the employees' roster of the company is entitled to the one day off with pay. In token of the ninth birthday, departmental chiefs and superintendents of the plant, held a banquet at a nearby lodge.

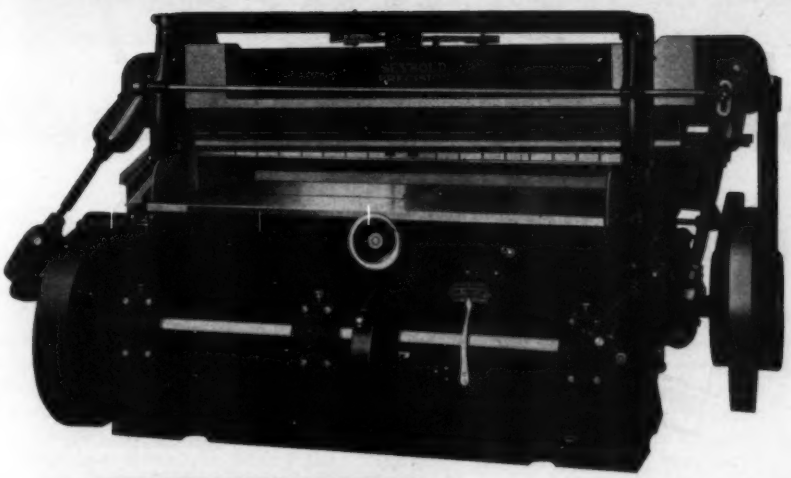
The Mersey plant has been one of the busiest in the Canadian pulp and paper industry, and has been without suspension of operations since its founding. All the newsprint produced at the mill is shipped by the company's own steamers direct from Liverpool to New York, for U. S. distribution, the shipments being made all through the year, because of Liverpool harbor, on the South Atlantic seaboard of Nova Scotia, being available to shipping all the year.



One of the rubber-lined retention tanks recently installed in the bleach plant of Abitibi's Smooth Rock Falls mill.

Seybold

THE MODERN TRIMMER



For the Paper Mill, Specialty Paper–makers and Paper Converters . . . . .

Designed with an engineering background of unquestioned leadership, the Seybold Precision Automatic Clamp Ream Trimmer offers to the paper industry such equipment as supports modern progress.

Accurate cutting, speed and long life under mill requirements are definite reasons for Seybold preference.

***Trim and Cut at Lower Cost with a Seybold Precision Automatic Clamp Ream Trimmer**

50 years of experience qualifies Seybold for leadership.

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PIONEER BUILDERS OF SUCCESSFUL CUTTING EQUIPMENT

This paper company's steam-cylinder lubricant was "washing out" every day . . . read how SHELL helped solve their problem . . .

THE Monroe Paper Products Company of Monroe, Michigan, manufactures line and chip board for shipping containers and wet-machine board for automobile interiors. For many weeks they had been having trouble with their power plant—a 1,125-H. P. steam engine operating their generator.

Due to excessive moisture in the steam, the lubricant in use was washing away, causing sticking valves and scored cylinders . . . despite the fact that excessive amounts of lubricant had been used, which resulted in an excessive amount of oil in the steam traps and in the dryer rolls, and permitted considerable oil to get into the boilers.

After a thorough study of the operating conditions, Shell Wolco Oil 82E was recommended for the lubrication of the steam cylinders.

Follow-up inspections of this engine revealed completely satisfactory results. C. C. Skidgel, Chief Engineer, states that on repeated occasions when the cylinder head was removed for inspection, the examination revealed a uniform film of oil covering the entire cylinder-wall surface, with metal underneath the film highly polished and free from scoring. Valves also showed an excellent film of lubricant.

As a result of the use of this Shell Lubricant, "washing out" has been completely eliminated. Shell Wolco Oil 82E has been in use in this engine since 1932. The Monroe Paper Products Company reports a consistent saving of 15 to 20% in oil consumption since then.

Shell's success in meeting this company's problem is being repeated in paper mills all over the country. Whatever your problem—Shell brings you a "plus" in lubricating service: Ingenuity and resourcefulness born of long experience — the finest products modern refineries can create. Shell men get results! These results can be yours for the asking. Simply get in touch with your nearest Shell office.

SHELL

SHELL *PAPER MILL* LUBRICANTS

Museum of Science and Industry Presents Scene of Grandeur

THE Museum of Science and Industry, in Jackson Park, Chicago, has welcomed the public for the past six years. And although its great halls were unfinished and only partly filled with exhibits, on Sundays, Saturdays, and even late afternoons during the week, families, school children, students, and visitors to the city were seen pouring into this temple of knowledge.

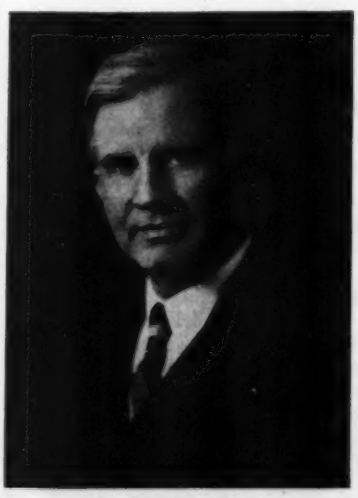
From its inception, the Museum has been destined to take its place among the outstanding institutions of its kind in the world. Its historic and beautiful home drew attention to the movement in the very beginning; an earnest and capable staff has planned and worked for the success of the exhibits; and the response by industrial organizations, associations, and scientific bodies has assured the realization of the vision that was in the mind of the late Julius Rosenwald when he endowed the Museum twelve years ago.

The restoration of the exterior of the Museum's home, the famed Fine Arts Building, survivor of the World's Columbian Exposition of 1893, was completed in 1933, just before the building was opened to the public. The large central pavilion was opened first; then in April of this year, the West Wing, which had been entirely completed, was opened, and the central pavilion closed for final work on its interior. This interior has now been finished and its grandeur cannot be described—it must be seen. In fact, to describe the beauty and size of this magnificent institution, and even to attempt a discussion of its exhibits, would take time, pages, and an unexcelled art of expression. It will not be a great while now before the public may see all of this institution's splendor.

The magnitude of this great building is hard to comprehend. It covers a nine-acre site; the three main floors have 680,000 square feet of space—more than 15 acres.

▸▸▸ The list of exhibits runs into hundreds, but a few of the outstanding ones are:

Chicago Tribune Press
American Petroleum Institute (complete)
Firestone Tire and Rubber Company
International Harvester Company
General Electric Company
Bakelite Corporation
General Motors Company
Chrysler Motors, Inc.
Ford Motor Company
Union Carbide and Carbon Co.



Dr. Philip Fox

Dr. C. Robert Moulton

Dow Chemical Company
Carborundum Company
Norton Company
Bausch & Lomb Optical Company
Westinghouse Electric & Mfg. Co.
Bell Telephone Laboratories
Sears Roebuck Company
Victor Chemical Company
Morton Salt Company
Hercules Motor Company
American Gas Association
Machine Tool Builders Association
Otis Elevator Company
Illinois Central Railroad
Pennsylvania Railroad
Chicago & Northwestern Railroad
Chicago Surface Lines

The Graphic Arts Exhibit already features a giant press on which, until recently, the Chicago *Tribune* ran its regular editions. This section will demonstrate an operating exhibit of printing machinery, linotype, monotype, and Ludlow typesetting machines, other presses, etc. There will be a reproduction of Gutenberg's historic shop and type foundry. Here in this exhibit visitors will watch the setting of type, see engravings made and assembled, and look on while the big *Tribune* press rolls off an eight-page standard-size newspaper, which the visitor may have as a souvenir.

▶▶▶ It must be clearly understood that although the Museum is entirely free from any commercial flavor, the exhibiting of equipment before the public is constantly bringing results to many exhibitors, but although somewhat unusual, a case in point is: a metal spraying equipment manufacturing company went to considerable trouble and expense to install one of its machines. A young man, a member of the Museum's staff, was assigned to operate the machine. This young man displayed so much ingenuity and became so proficient in his work that it soon came to the attention of the donors of the machine. They watched him work and found he had developed unusual skill in handling their equipment, and that his ideas were valuable. They promptly offered him a fine connection with their company. The young man profited handsomely. But that is not all. The company soon found that many inquiries were being made as to where this machine could be bought, and how. The company's business grew.

▶▶▶ The location of the Pulp and Paper Exhibit will be in a hall immediately following the Forestry section, and just preceding the Chemistry Division. This will give the visitor a chance to more fully appreciate the two fundamental factors which constitute the industry—forestry and chemistry.

No special exhibits will be set up to show the management of forests solely for the paper industry. Principles of mensuration, silviculture, utilization, protection, and reforestation are, as a whole, the same as those applied to using timber for lumber, veneer, etc. However, where a phase of forestry has a distinct association with the pulp and paper industry, it will be indicated by the label in the exhibit.

For example, it is planned to show methods of improving streams to facilitate driving logs down them. If a certain type of improvement such as a dam is used primarily in a pulpwood region, this fact will be made clear. Where certain timber species are fast growing, and have a low value for lumber, but are exceedingly good for pulp, it is planned to show why. This sort of treatment will be followed throughout.

But when it comes to pulp and papermaking as a distinct industry, the processes will be shown from the point where the wood enters the mill yard to the point where the finished sheet comes out. It is hoped there will be an actual model of such a yard showing the slasher saws, conveyors, tumbling barrels, barker, chipper, grinder, and digester buildings. However, if the model is not available, diagrams and photographs will be used. The processes from the point where the white water begins will be explained by the use of actual machinery, models, and experimental displays.

The men in charge of planning the Papermaking Exhibit believe that no better method could give to the visitor an understanding of just how a sheet of paper is formed than to have the opportunity to make a sheet himself. It is hoped some hand-made paper equipment will be available for this purpose.

As one of the country's foremost industries manufacturing one of the most commonly-used commodities, the Papermaking Exhibit should, of course, contain equipment of the most modern type. Fortunately, even though this machinery runs into giant proportions, almost every machine used in a paper mill is made in the laboratory size. These small models are efficient and easy to operate, and would give the public a most comprehensive idea of how paper is made. It is hoped by all concerned that the Papermaking Exhibit will be such a complete one that the public will become keenly interested in learning more about this every-day, widely-used commodity.

▶▶▶ The staff of the Museum includes men who have risen to positions of prominence in their respective professions. Widely known throughout the country is the Director, Dr. Philip Fox, formerly Director of the Adler Planetarium, Chicago. As Curator of Chemistry, Dr. C. Robert Moulton, who has an enviable record in educational work, has planned wisely and worked diligently to bring into the Museum exhibits that will portray the very latest scientific developments. The Graphic Arts Division mentioned in this article is handled by Mr. D. M. McMaster, who has been more than successful in planning the attractions to be featured in that popular section. The Forestry Exhibit is under the able direction of Mr. Helmuth Bay, Research Associate in Forestry. An interesting sidelight on the experience of this gentleman is that at one time he was associated with a large Canadian paper mill. And, as Assistant to the Director, Mr. John A. Maloney contributes to the Museum a wealth of experience gained over his years of service with the institution. Mr. Maloney has been with the organization since its inception, and is one of its most valuable staff members.

◆

MAY FORM NEW CANADIAN ASS'N

Some hundred and fifty officials and employees of the pulp and paper mills from the Lake head and points west assembled recently at Port Arthur, Ontario, to enjoy an informal dinner and ascertain the advisability of forming an association of Northwestern Ontario and Manitoba mills so that periodical get-together meetings might be held and various matters pertaining to the manufacture of pulp and paper discussed. A committee, headed by E. L. Goodall, Provincial Paper, Ltd., Port Arthur, was formed for this purpose. The committee is to meet shortly and when arrangements have been formulated, another gathering will be held and election of officers will take place.

◆

MODERNIZATION AT PARKER-YOUNG

The Parker-Young Company, Boston, commenting in its annual report on operating conditions, states that during the past year the plant has been modernized in many ways. The company has operated six days a week most of the year, but owing to the larger proportion of smaller orders, requiring many changes, the production is comparatively small. The company's logging operations this year will be affected by the hurricane damage to its timberlands. Company's total assets current are $1,049,933. The liabilities, including an RFC loan, are $880,590.

Running at **325°**

THIS *Dryer Shaft*

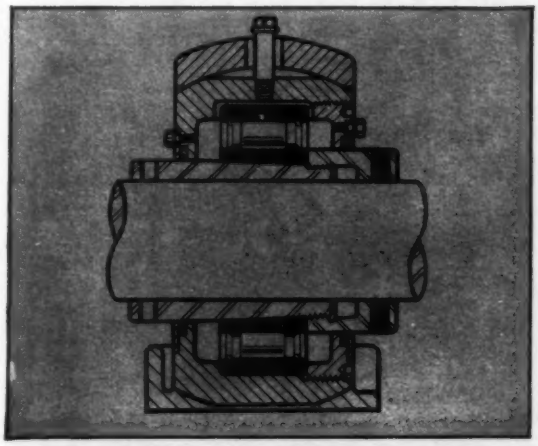
LENGTHENS $\frac{3}{16}$ **INCH**

yet Standard

ROLLWAY Roller Bearings

(with solid cylindrical rollers)

Handle this Varying Float



"Engineered to the Job"

Because all ROLLWAY BEARINGS are engineered so accurately to particular loads, speeds and operating conditions, this standard No. 352 Heavy Series Self-Aligning type proved to be ideal for the specific operating requirements of the dryer cylinder on a secret-process paper-coating machine. Of full-roller type with double-width bearings, the assembly is suitable for the heaviest service. The adapter sleeves extend through the housing covers, permitting tightening the adapter without opening the bearing housing.

This dryer-cylinder is on a high production paper-coating machine where smooth, even motion is essential to give a fine finish on fine grades of paper. A total cylinder weight of 15,000 pounds and a top cylinder speed of 50 rpm. are no problems at all. But high pressure steam passing through the cylinder is a constant source of danger—because it heats the metal from 250 to 325 degrees and causes an endwise expansion up to $\frac{3}{16}$ inch. Many bearings would jam under the expansion in this tough spot. Yet two No. 352 Heavy Series Self-Aligning Rollway Pillow-Block Bearings —*standard design, without special housings*—handle this float smoothly and easily, with never a hitch.

That's because the rollers are solid cylindrical, with a long rolling, line contact upon the straight cylindrical races. They give a maximum cross-section of roller metal to support the load, and *they are the only kind of roller that allows the shaft to float axially in the bearing.*

Both of the bearings on the dryer-cylinder are self-aligning, compensating automatically for any bending or misalignment of the shaft. One of them provides fixed axial location. The other lets the shaft float freely lengthwise—a combination that is essential in many installations, and one that is especially suitable to the design of dryer cylinders where there is considerable expansion and contraction.

Types for every PAPER MILL NEED

Rollway's free Advisory Engineering Service will gladly assist you in selecting the highest efficiency Rollway Bearing for:

- ★ Dryer Cylinders
- ★ Jordans—all makes, front, back, outboard bearings
- ★ Felt and Wire Carry Rolls
- ★ Breast Rolls
- ★ Suction Press Rolls
- ★ Cylinder Molds
- ★ Couch Molds
- ★ Primary Presses
- ★ Main Press Rolls
- ★ Pulp Grinders
- ★ Chippers
- ★ Deckers
- ★ Slitters
- ★ Reels
- ★ Loose Pulleys
- ★ Calendar Stacks—bottom, top and intermediate rolls

ROLLWAY BEARING COMPANY, INC.
SYRACUSE, N. Y.

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31 Years Building Heavy-Duty Bearings

To Cut The Time Between

INVESTMENT *and* RETURN

Once the plans are approved, the materials specified and construction begun on your new power plant or process lines, *every day counts.* Your new installation will be more efficient, will return larger profits than the old one — *but not until it is in operation!*

Grinnell Prefabrication provides a sound, tested short-cut to quick erection. Accurate sub-assemblies, prefabricated to specifications, are easily and economically field-welded into a finished piping system, ready for use.

Grinnell's advanced plant facilities, strategically located for service to the East, Central, South and Western parts of the continent . . . Ability to interpret ideas and plans into piping . . . Qualified welders and experienced shop men are among the reasons why it pays to "Give the plans to Grinnell!" Grinnell Co., Inc., Executive Offices, Providence, R. I., Branch offices in principal cities.

PREFABRICATION BY GRINNELL

WHENEVER PIPING IS INVOLVED

PAPER TO BE GLORIFIED AT SAVANNAH FESTIVAL

PLANNED with the twofold purpose of attracting those interested in paper and its allied fields and commemorating paper itself, the First Annual Paper Festival will be held April 17-19 at Savannah, Georgia. The festival's industrial motive towards the advancement of paper products will be augmented by lavish entertainment features to attract the general public.

The motive of the festival has been generously accepted by the principal manufacturers and executives of the Southern States as worthy of their sponsorship and the preliminary financing is being arranged through the Southern Paper Festival Association. Provision is being made for several industrial exhibitions, the main one of which will be held in the Municipal Auditorium. This latter will be a paper and fibrous products display, representative of all grades regardless of point of manufacture. An exhibition of industrial equipment will be held at the Hotel DeSoto and a forestry conservation exhibit will be on display at the Savannah Hotel. Information regarding reservations for the paper products exhibition space, equipment exhibition space and for advertising in the souvenir program which is to be distributed to various representatives of the industry, may be obtained by writing D. G. Moon, Managing Director, Southern Paper Festival Association, Savannah.

Extensive plans are now under way to offer the public attending the festival a colorful and diversified entertainment program. Built around the central theme of paper, the program will include such brilliant displays as a pageant depicting the history of paper from the day of papyrus to its first inception in China and thence through the ages to the present; a ballet symbolizing the many uses of paper; various parades with representative floats; military and naval reviews; colored costume baby parade; water sports, etc. On April 19, the last day of the festival, there will be a "Paper" Mardi Gras with street dancing and mummer's parade similar to the traditional New Orleans event.

A highlight of the entertainment will be the selection of the King and Queen of Paper by Papyrus, a secret festival society, with a court of princesses from each state. A coronation ceremony, with all the pomp and ceremony of the "genuine article" will take place, after which there will be a grand coronation parade.

One-half of the capacity of the main hotels will be reserved for representatives of the paper industry and their guests. Reservations, therefore, should be made as soon as possible. Facilities also will be made available by the festival committee for trade group meetings that those in the industry may desire to hold at Savannah during the festival.

The festival will be held at the time of the year when Savannah will be at its best. Savannah's proximity to the ocean and its inland waterways, together with its several golf courses, will offer every opportunity for interesting sports events and special golf, skeet, pistol and tennis matches to be arranged.

BROWN RESUMES SHIPMENTS OF PULP TO JAPAN

Shipments of rayon sulphite and other famed Solka pulps of the Brown Company, Berlin, N. H., to Japan have resumed during December with two 1,000-ton cargoes recently loaded at Portland, Maine. This will bring the 1938 Japanese tonnage of the Brown Company up to 22,000 tons as compared to 48,000 tons last year. In March or April the shipping schedule will be resumed on a three ship per month schedule, which means a possible outward movement of 3,000 tons per month or more.

Commenting on this resumption R. L. Vayo, assistant manager of the Brown Company's Foreign Department, says that the exports of the company's products depends very largely on the success of the Japanese import-export link system, the quantity imported to be determined in large measure by the quantities of rayon yarn and other textiles exported to world markets. So far as can be determined, practically all of this pulp is for consumption in the synthetic textile industry.

◆

U. S. CUSTOMS NEWS

The United States Customs Court has decided that white paper imported in sheets at Los Angeles with an ash content of 6 and 7 per cent, is dutiable as printing paper because the importer could not show that such paper was chiefly used for newspaper publications. The importer had claimed it to be free as standard newsprint paper. The Customs Court also upheld a finding of undervaluation by New York officials on beer mat board imported from Austria. The Customs officials held that the board had been undervalued about 10 per cent. The decision affects twenty-six shipments totaling about 400 tons. The importer has appealed from this decision to a board of three judges of the Customs Court.

The Import Committee of the American Paper Industry recently brought to the attention of Customs Officials, a question whether paper of a type generally known as tablet writing, is dutiable as writing paper at 3 cents per pound and 15 per cent or as printing paper at ¼ cent per pound and 10 per cent.

◆

ANNOUNCE NEW CANADIAN MILL

A new paper plant capable of producing 1,259 tons annually of glazed paper for magazine covers, cigarette papers, etc., is expected to begin operations in Toronto at the beginning of 1939, according to T. H. Bartlett, general manager of the Toronto Industrial Commission. The firm will be known as Canada Glazed Papers, Ltd.

◆

PAVE WAY FOR EASTERN CO. REORGANIZATION

With all official committees of the Eastern Manufacturing Company security holders, creditors, et al., in agreement on a plan of reorganization, the last important barrier to the company's emergence from the 77-B court jurisdiction has been removed. There remains only the taking of a vote of the various security holders and creditors. If more than two-thirds of the bonds and more than 50 per cent of the stock is voted in favor of the plan, it will no doubt be declared operative by the court.

The common stockholders have compromised their sole differences with the five other groups by agreeing to accept two warrants entitling them to buy new common stock at $10 and $12 in the ratio of one warrant for a half-share of stock. The original plan of the Orono 6 per cent bondholders will be rewritten to take care of this stock provision. The plan otherwise involves, in brief, the issuance of $1,702,650 of 5 per cent 15-year closed mortgage bonds and 4 per cent 5-year notes to the amount of $1,152,000. Common stock would be increased by

170,265 shares to a total of 200,169. The new 5 per cent bond is convertible at any time into 100 shares of common. Preferred stockholders will exchange their securities for four times the amount in common. Convertible preferred new shares are to be given for bondholders' deferred interest.

It has been rumored that the company's name will be changed in order to connect it with its leading products. One name suggested has been the Atlantic Pulp and Paper Company.

◆

JAPANESE TO BUY CANADIAN TIMBER

Japanese pulp interests are now completing negotiations for the acquisition of 1,200 acres of pulpwood timber on Vancouver Island at Barkley Sound. Preliminary arrangements were made public a few months ago and Heijior Nishi and Shigero Sakaguchi, both officials of the Karafuto Paper Pulp Company, have arrived at Vancouver from Tokio to complete the deal.

◆

BUSINESS GOOD AT AWP COMPANY

The American Writing Paper Corporation of Holyoke, Mass., is enjoying its best business since the reorganization of the firm two years ago and all of the 14 machines are running at capacity. President Leon P. Yoerg stated that the sharp upturn has developed during the past few weeks and that orders are piling up on the company's books in sufficient quantities to keep mills running for some time to come. So pressed has the firm become that the auxiliary air dryer, installed in the Beebe & Holbrook Division, is being used.

◆

PULP TERMINAL MODIFIES ITS STORAGE RULES

Importers using the port of Boston for bringing in European wood pulp were interested to know that though the Mystic Terminal Company had relaxed its storage rules, there were still important provisions which limited the amount of pulp which could be left with the terminals after free time had expired. The company's total stocks towards the end of October had dropped to about 22,000 tons, compared to 29,000 the middle of September. At the earlier date it was refusing to allow discharges of pulp unless shippers guaranteed to remove all but five carloads per steamer when free time had expired. This has been relaxed to the extent that at the last report the company was permitting storage of some 30 cars of pulp per vessel. Both Wiggin Terminal and Army Base, the other important discharging points in Boston, had some 10,000 tons on hand between them. With the arrival of heavier shipments from the Baltic ports, the port stocks at Boston and elsewhere along the North Atlantic are expected to increase materially.

PRODUCTION RATIO REPORT

(Based upon paper production reports to the American Paper and Pulp Association)

COMPARATIVE MONTHLY SUMMARIES

Months	1938(c)	1937(c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	—
February	68.7%	90.1%	77.9%	70.0%	—
March	69.6%	90.3%	76.0%	70.5%	—
April	68.3%	92.1%	82.3%	70.0%	—
May	69.0%	90.6%	81.6%	69.4%	—
June	66.0%	87.3%	80.7%	72.3%	—
July	72.0%	81.8%	77.3%	64.9%	—
August	77.2%	82.9%	81.5%	70.9%	—
September	76.3%	78.6%	80.5%	71.9%	58.2%
October	82.5%	73.5%	87.6%	75.6%	64.7%
November	—	61.9%	88.0%	75.3%	61.7%
December	—	54.5%	85.9%	71.2%	59.6%
YEAR AVERAGE	—	80.6%	81.3%	70.5%	—
First 46 weeks	71.9%	84.1%	80.7%	70.3%	—

(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

(November totals have not yet been published. However, for the week of November 19, 1938, figures show 80.6% as against 62.5% for the same week of 1937.)

(Total number of mills reporting, 238. The ratio of 52 of these mills was 50% and under; 186 mills rated 51% to 100%.)

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation based on "Inch-Hours," were as follows:

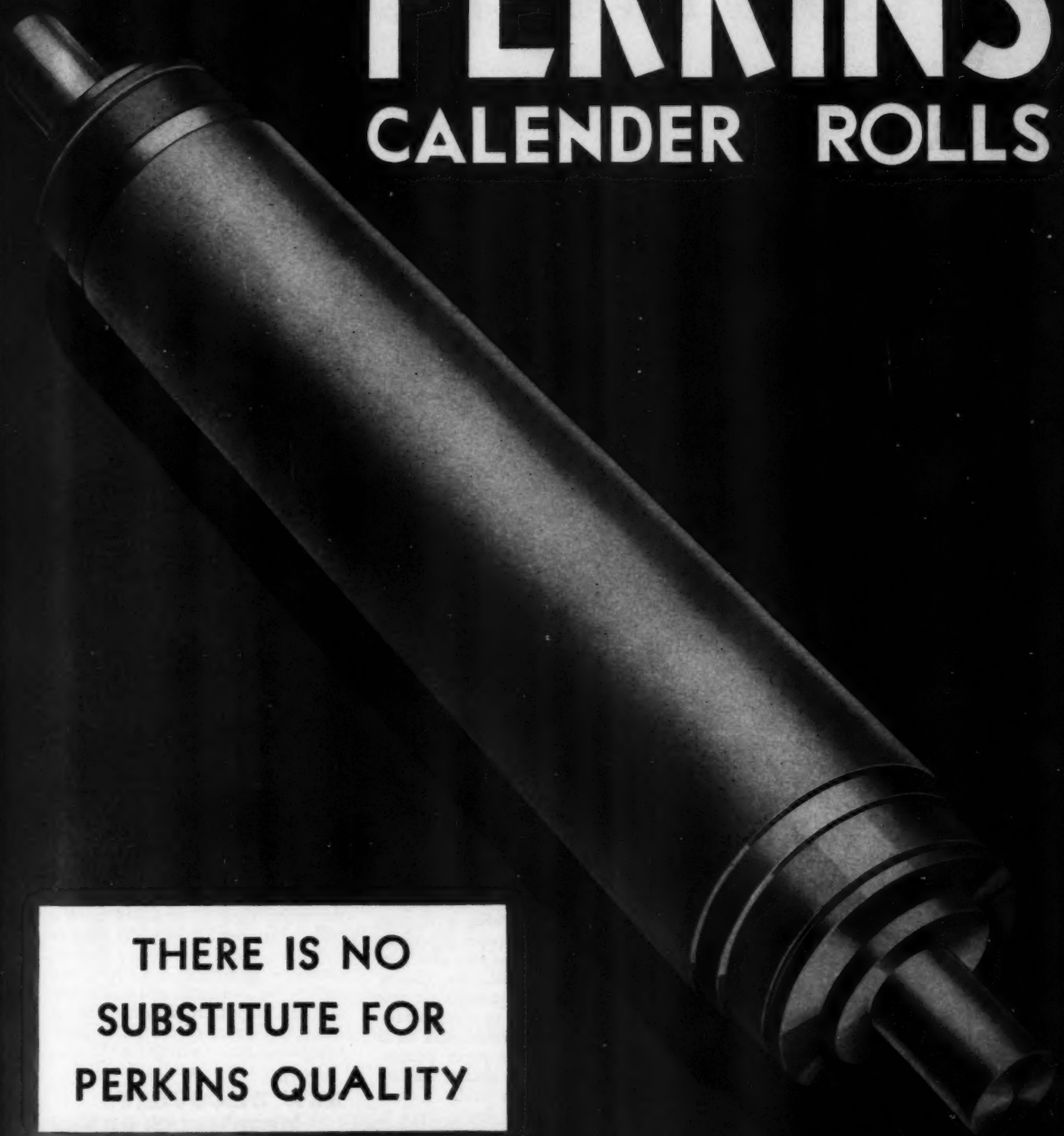
Months	1938(e)	1937(e)	1936	1935	Months	1938(e)	1937(e)	1936	1935
January	55%	80%	61%	61%	July	57%	67%	69%	59%
February	61%	86%	67%	67%	August	66%	74%	75%	65%
March	60%	87%	68%	67%	September	66%	70%	76%	69%
April	57%	89%	70%	61%	October	70%	66%	82%	76%
May	58%	86%	68%	61%	November	—	56%	79%	70%
June	56%	75%	68%	65%	December	—	46%	74%	60%

Week ending November 19, 1938—67%

(e) Basic figures revised to include new members of the National Paperboard Assn. November 25, 1938.

Above is shown new machinery recently added to the Port Edwards woodroom of the Nekoosa-Edwards Paper Company, Port Edwards, Wis. In the foreground is a planer, with the two dato saws placed between the planer and the knot drill at the far end.

PERKINS
CALENDER ROLLS



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HOLYOKE - MASS

JOHN Q. PUBLIC LIKES HIS MILK IN PAPER CANS

AMONG the more recent trends in the field of paper consumption is the wide popularization of the paper milk and cream container. By no means a new creation—it was first produced some thirty-odd years ago—the paper milk and cream container is now being used to a greater extent than ever before and in recent weeks has been given much publicity by various newspapers throughout the United States.

Already in rather extensive use in the East and Far West, the paper container is also making strides towards the replacement of the glass bottle in other sections of the country. In Chicago, for instance, several of the larger milk companies recently began to distribute milk in paper containers throughout the suburbs. As yet the containers are barred from Chicago by the Board of Health, but a report on the sale of milk in paper containers in Chicago's suburbs is to be sought, for information of the city council.

Newer researches towards the perfection of paper containers for milk and cream are taking place at the University of Wisconsin, which school hopes to develop a product that can be added to the specialty lines on a basis that will lead to general usage as a substitute for the glass bottle. The packages are now being developed from virgin pulp, held together by adhesive cements and are resistant to bacterial growth.

Obviously, of course, there are many advantages to be found in the use of paper containers, not the least of which is the fact that the paper container can be made sterile to a greater extent than can the glass bottle. In the very manufacture of paper it will be appreciated that few, if any bacteria, could endure the chemical and heat treatment to which paper is subjected. Quoting from a paper presented before the International Association of Milk Sanitarians by E. Wheaton, R. Lueck and F. W. Tanner of the American Can Laboratories and the University of Illinois: "Fiber milk containers are now being supplied to dairies in a nearly sterile condition as determined by a rinse test method approved by several laboratories. Approximately eighty per cent of fiber milk containers now being used yield no viable bacteria. Of the remaining 20 per cent that do show colonies on plates made with rinse water, over 90 per cent give fewer than five colonies per bottle, the greater majority showing but one colony per bottle. These counts are especially significant when it is realized that the Public Health Ordinance and Code (1935) states that bottles shall be so clean that they shall contribute not more than approximately 1,000 organisms to each quart of milk or one bacteria or colony per ml. capacity."

Convenience, of course, is a decided advantage of the paper container. Its easy disposal by the consumer and easy transportation by the milkman and cash and carry customer alike are definite points in its favor. With certain types of paper containers it was found that 24 quarts could be carried in a case that formerly held but 12 glass bottles. Another advantage is the fact that expensive washing equipment could be eliminated. It would certainly seem that milk and cream sold in paper containers would be marketable to a greater extent than that sold in glass bottles. To the direct consumer, especially, it would be more appealing inasmuch as breakage would be minimized and the deposit-paying eliminated.

One of the disadvantages, at present, is the fact that paper containers cost more than do glass bottles. According to the *Chicago Tribune*, the carton cost the milk companies 1⅛ cents per quart or more. Glass bottles, says the *Tribune*, cost five cents wholesale but may be used for at least twenty-five trips, reducing the cost to one-fifth cent. Also, it must be remembered that the glass bottle has the preference from the sales psychology angle inasmuch as the customer usually likes to see what he purchases.

Although paper containers for milk and cream are, at present, coming to the fore in great strides, it is most certainly a fact that paper containers for other food products such as orange juice, carrot juice, etc., are gaining approval. If such approval as is now apparent should become widespread—as it well can—it would lead to a manyfold increase in paper production and open wider, greater markets in the paper specialty field.

◆

KEITH PAPER CO. REORGANIZATION

Stockholders of the Keith Paper Company, Turners Falls, Mass., recently voted to accept the reorganization plan first submitted to them rather than accept the offer of New York interests to purchase a minimum of 51 per cent of the company's stock (cf. THE PAPER INDUSTRY AND PAPER WORLD, p. 822, Nov., 1938). The offer of the New York interests did not bring forth enough stock to consummate the deal.

Paul E. Hodgdon

By the stockholders' vote, the control of the company remains with the present stockholders. The reorganization will be effected with the Deerfield Glassine Company. Paul E. Hodgdon, president and treasurer of the Glassine firm, will be general manager of the Keith concern.

The RFC has agreed to loan the company $250,000 while the Merchants Bank and Trust Company of Greenfield, Mass., will loan $100,000. The Turners Falls Power and Electric Company will loan $25,000, making a total of $375,000 new working capital. These loans will be secured by a mortgage of the fixed and certain other interests of the company.

The RFC requires that a majority of the voting stock be deposited under a voting agreement during the term of the plan. There will be five trustees, two to be appointed by the RFC, one each by the two banks and a fifth who will be Douglas Crocker of Fitchburg, Mass., a director of the Keith Paper Company. Officers will be elected soon.

◆

NEW DISCOVERY RESEMBLES PAPER

Arousing much interest in the paper industry is the recent discovery of a sheet, made entirely from clay, which can be used for wrappings of oily substances, insulation and stationery. The discovery, a result of the experiments of Professor Ernest A. Hauser of the Massachusetts Institute of Technology, was recently shown before the New

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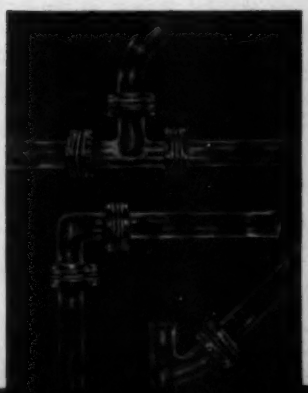
"PYREX" PIPING *Characteristics*

Chemical Stability*
Mechanical Strength
Resistance to Thermal Shock
Visibility
Permanent, Hard Surface

*Remarkable resistance to all acids and alkalies in solution except HF.



England section of the Technical Association of the Pulp and Paper Industry.

Professor Hauser showed sheets of the material which he first noticed as a film in a thimble while making experiments on bentonite, a clay used in foundry moulding, toothpaste, face powders and facial packs. In the first public demonstration of the new substance it has been found to take printing ink excellently.

Most interesting to the technical experts of TAPPI was the fact that the clay formed an excellent felt-like material. This was explained by Professor Hauser as probably resulting from electrical charges in the clay which made the molecules form into strings which would mat together and allow the film to be folded.

While not actually paper, this new product will adapt itself to a limited use in some fields where paper is being used extensively.

◆

BROWN COMPANY REORGANIZATION

Still unapproved by security holders, the reorganization plans of the Brown Company, Berlin, N. H., are, nevertheless, to be presented to them before long. It is believed that substantial agreement has been reached between the conflicting interested groups. Of the utmost importance is the $8,000,000 RFC loan which is said to be quite an essential part of the plan. It is with this money that a very broad program of rehabilitation of plant and equipment is to be undertaken at Berlin. The money is also needed to repay advances from the treasury of the State of New Hampshire which has been paying Brown's logging bill in recent years, partially as a relief measure and partially to keep this important industry active for the general benfit of the State. The problem of those working out the reorganization and recapitalization is to devise some plan that will last a long time.

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FINANCIAL

FINANCIAL reports of paper companies continue to show that the latter part of 1938 has been marked by a decided upturn in demand and consequent operating profits. November production is slightly below that of October, but materially above that for September, despite the fact that November is seasonally dull in some of the important producing fields. Recent official financial reports include the following:

Mead Corporation—For forty weeks ending Oct. 1, a net profit of $22,999 is reported, compared with a profit of $1,704,651 in the same period of 1937. A demoralization of prices in the third period of the year is blamed for the present showing, but material improvement in the fourth quarter is indicated.

Scott Paper Co.—Nine months ending Oct. 2, show net profit of $1,104,532, or $1.92 per common share, compared with net earnings of $965,233 for the same period of 1937.

National Container Co.—Nine-month profit of $101,321, or 30 cents per share, is reported as compared with $361,898 for the same period of 1937. Of the profit about half was accumulated in the third quarter.

Container Corp.—After seven months of constant losses, an improvement in business allowed the company to show a profit of about $125,000 in August and September.

Robert Gair Co.—Net loss for the third quarter was $37,946, as compared with a loss of $49,733 in the second quarter.

Certain-teed Products Corp.—Net profit for third quarter $195,729, as against a loss of $189,587 in the first quarter, and a profit of $106,618 in the second quarter.

Hummel-Ross Fibre Corp.—Profits for nine months to Oct. 1 $76,666 as against $634,703 in 1937 for the same period.

Sutherland Paper Co.—Net profit for the first nine months was $506,491 as against $710,597 for the same period of 1937.

Soundview Pulp Co.—Net income for the September quarter was $66,379 as against $110,764 in the preceding quarter.

Nashua Gummed and Coated Paper Co.—Earnings for the first nine months were $60,265, despite an operating deficit of $22,862 in the first quarter.

Gaylord Container Co.—Third quarter profit was $244,746 or 32 cents per share, compared with $641,349 for the same period last year. Nine months profits were $749,014 as against $1,743,901 for the same period in 1937.

Dixie-Vortex Co.—Twelve months ending Sept. 30 showed profit of $729,118, or $1.39 per common share, compared with earnings of $946,450 for the same period ending Sept. 30, 1937.

Lily-Tulip Cup Corp.—Net profit for the year ending Sept. 30 was $344,819, as against $352,150 for the preceding year.

Great Northern Paper Co.—An extra dividend of 63 cents per share in addition to the regular dividend of 25 cents was voted for the stock of record on Nov. 19. The same extra amount was voted a year ago, and an extra dividend of 12 cents was paid for the second quarter of this year.

Crown-Zellerbach Corp.—A bank loan of $10,000,000 has been floated at an interest rate of 3½ per cent to retire outstanding bonds of over $9,000,000 carrying 6 per cent interest.

Rayonier, Inc.—A net income for the third quarter is reported of $64,895, as against a loss of $183,264 for the preceding quarter.

A. P. W. Paper Co.—A loss of $1,735 is reported for the quarter ending September 30, as against a loss of $1,389 for the same quarter of 1937.

New York Stock Exchange—Stocks

1938	Closing Sale Nov. 30	Closing Sale Oct. 31
Celotex	14	15
Same Preferred	*62½–70	69
Certain-teed Products	10	11⅜
Same Preferred	40½	44
Champion P. & F. Co.	30¼	29
Same Preferred	*98–100	99
Container Corp.	14½	16⅛
Cont-Diamond	9⅜	10¾
Crown Zellerbach	13¼	13⅞
Same Preferred	91	87½
Dixie Vortex	12⅛	*11¼–12
Same "A"	*31–32	*30–30¾
Robert Gair	3⅞	4½
Same Preferred	*11⅜–12⅞	14½
Kimberly-Clark	*24½–27	27
MacAndrews & Forbes	29	*28⅞–29½
Masonite	54	57
Mead Corp.	*12–12⅜	13¾
Same Preferred	*65–75	——
Paraffine Co.	57	57
Same Preferred	*99⅜–100	*99¾–102
Rayonier	17	17
Same Preferred	*22¾–23⅛	24
Scott Paper	50	49½
Union Bag & Paper	12	13⅞
U. S. Gypsum	105	108
Same Preferred	172	171

New York Stock Exchange—Bonds

Celotex 4½%	91¼	92¼
Certain-teed	80	82
Champion P. & F.	99⅝	100
Container Corp. 5%	100	99½
Same 6%	104⅛	——
Inter. P. & P. 6%	85½	89⅞
Same 5%	96¼	97
Mead Corp.	103¾	104

New York Curb Exchange—Stocks

Am. Boxboard	9⅝	*11½–12
Brown Co. Pfd.	21	*23½–24½
Det. Paper Prod.	* 2¼–2½	*2½–2⅝
Great Northern Paper	39	*34⅛–36
Hummel Ross	3⅞	4⅛
National Container	* 7–7⅛	7¼
St. Regis	* 3–3¼	4
Taggart	5	*5¾–6
United Wall Paper	2¾	3

*Closing Bid and Asked Prices.

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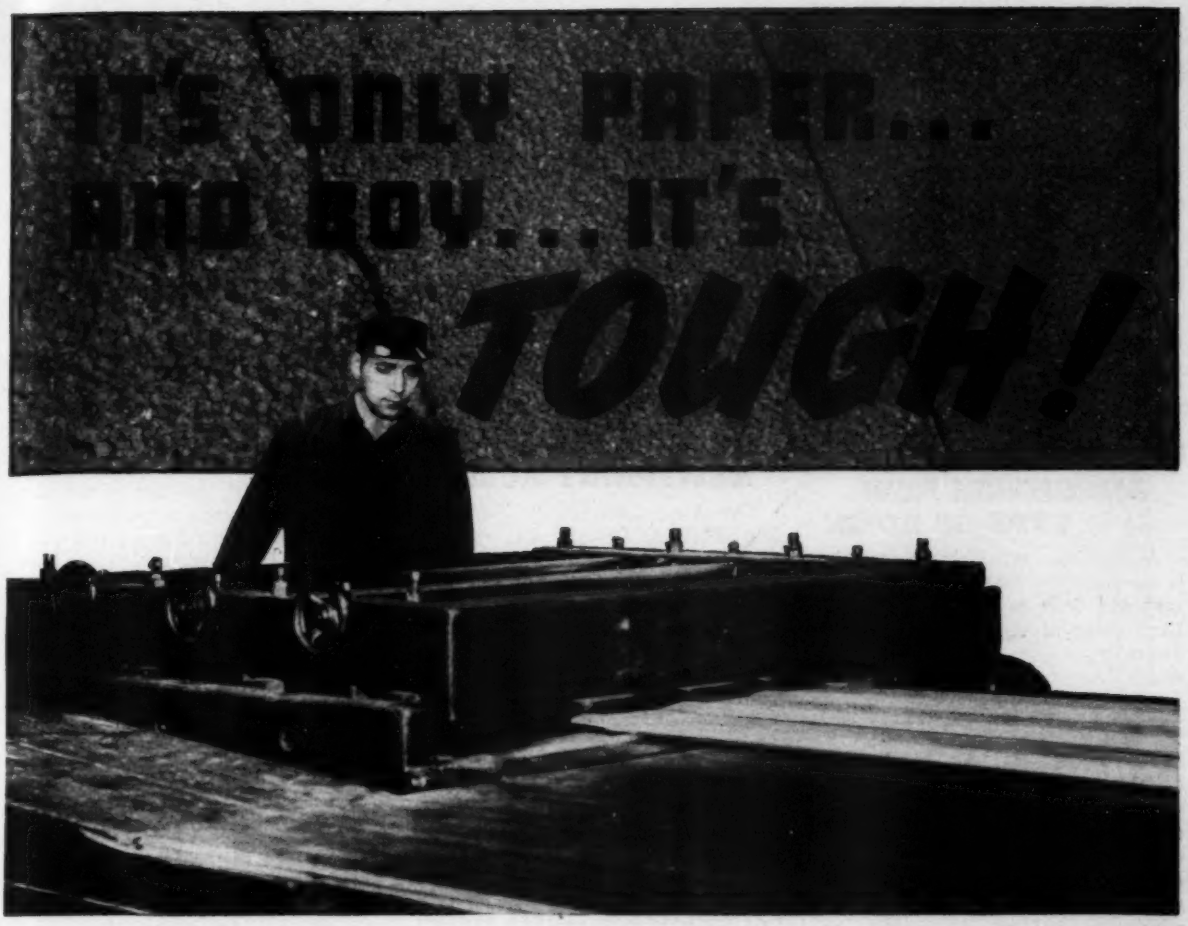

Sanding machines in a planing mill subject paper to just about the toughest job that any sheet can tackle. Great, wide sheets, coated with grit, cover the swiftly revolving rollers that put the finish on every piece of interior wood work. The strain is terrific but the paper technologist takes it in his stride.

Next time you see a man sanding the wood work of a building to prepare it for a coat of paint . . . or a carpenter refinishing a hard wood floor . . . take your hat off to the manufacturer of the paper. In all probability he relies upon Hamilton Felts to remove the water rapidly, uniformly, thoroughly and at low cost, from the web at the wet end of his machines. That is how he makes the stock so tough and so cheap.

• *From the thinnest tissue to the heaviest boards there is a Hamilton Felt that will do your work better, faster and at lower cost.* •

SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills, Established 1858 •

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Hamilton Felts

SALE OF POWER COMPANY MAY AID ABITIBI

Purchase of the distribution system of the Kalministiquia Power Company by the Ontario Hydroelectric Power Commission might provide Abitibi Power and Paper Company with new money, inasmuch as Abitibi owns all the outstanding bonds and capital stock of the power firm. The power development in excess of that required for the operation of the Fort William newsprint mill owned by Abitibi, is supplied to about forty customers.

◆

U. S. BUREAU ANNOUNCES NEW TYPE OF ROSIN

A new, non-crystallizing gum rosin is announced by the Bureau of Chemistry and Soils of the United States Department of Agriculture. It is a natural rosin from southern pine gum, which does not crystallize in ordinary usage. The new rosin is made only from the liquid part of the oleoresinous exudate of the living tree and its preparation is based on a recent finding by S. Palkin and W. C. Smith. Bureau chemists, that the semi-solid mass which forms when the gum is allowed to stand contains more resin acids which later contribute to the crystallizing tendency of the rosin.

Semi-plant scale tests have shown that production of the new rosin is commercially feasible. A public service patent, making it available to anyone, has been applied for.

◆

GREAT LAKES CO. WILL ABIDE BY NEWSPRINT RULING

The Great Lakes Paper Company, Fort William, Ontario, was recently served notice by the Ontario Government to abide by the proration agreement of the newsprint industry under which no mill is to operate at a higher rate than the average of the industry. The company claimed it was not able to comply with the agreement without violating its contract for newsprint. The company, however, stated its willingness to abide by the agreement with which all the other companies involved had already complied. C. H. Carlisle, president of the company, resigned from the presidency in protest against the action of the government. The Hon. Earl Rowe was elected president to succeed Mr. Carlisle.

◆

POWER PROJECT TO AID MERSEY

The Mersey Paper Company, Liverpool, N. S., will be able to increase its output of newsprint from 72,000 tons to 110,000 tons due to the new 10,200 horsepower development at Comie Falls by the Nova Scotia Electric Power Commission. No plans have yet been announced for additional facilities in the Mersey plant itself, although there has been rumors relative to the possible installation of another paper machine.

BRIEFS

▶▶▶ PAPER MILLS HAVE RECEIVED WARNING that the new wage and hour law bill went into effect October 25 regardless of any delay that may be experienced in forming an industry committee to adjust wage and hour schedules equitably within the industry. Regardless of any conflicting wage agreements that have been made by employers with their workers, there must be a minimum wage of 25 cents an hour under the new law.

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▶▶▶ THE QUEBEC NORTH SHORE PAPER COMPANY, subsidiary of the Ontario Paper Company, is adding a 26-foot winch boat of welded steel construction to its fleet. This is the second boat of this size and type which has been supplied the paper company by Russel Brothers, Ltd., Owen Sound.

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▶▶▶ THE CANADIAN INTERNATIONAL PAPER COMPANY MILL at Hawkesbury, Ontario, resumed operations November 28 after having been closed since November 5.

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▶▶▶ PLANS FOR A BOOMING AND HOLDING GROUND and log storage area to be built in Nipigon Bay, Lake Superior, have been filed with the Minister of Public Works at Ottawa by G. S. Currie, receiver for the Lake Sulphite Pulp Company, Ltd., Red Rock, Ontario.

▶▶▶ TAXES ON TIMBER HOLDERS in British Columbia will be increased 50 per cent at the present session of the legislature. Details of the government's new forest conservation policy include a new tax of 6 cents per acre on timberlands, instead of the former 4 cents. To provide still more revenue for forest conservation and fire fighting, the government will increase its contribution to the forest fund by $100,000.

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▶▶▶ A RECENT FIRE did damage estimated at approximately $50,000 to the plant of the San-Nap-Pak Manufacturing Company, Inc., facial tissues manufacturers, Wheelwright, Mass. The company was unable to continue operation but it is expected that the plant will be repaired and the machinery operating shortly.

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▶▶▶ GERMAN PULPWOOD BUYERS have been in New Brunswick during the past month, according to news brought to Boston by lumber operators. The Germans have been heavy buyers of Nova Scotia and New Brunswick wood during the past year and are now said to be considering even more extensive buying operations.

▶▶▶ ACCORDING TO THE LANDS AND FOREST DEPARTMENT of the Province of Quebec, between 22,000 and 24,000 woodsmen are engaged in the forest in the cutting of pulpwood and saw wood, as compared with 48,000 last year when the cut was much greater.

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▶▶▶ GUMMED PAPERS, LTD., Brampton, Ontario, has awarded contract for a one-story addition to its plant to make way for increased expansion of its products.

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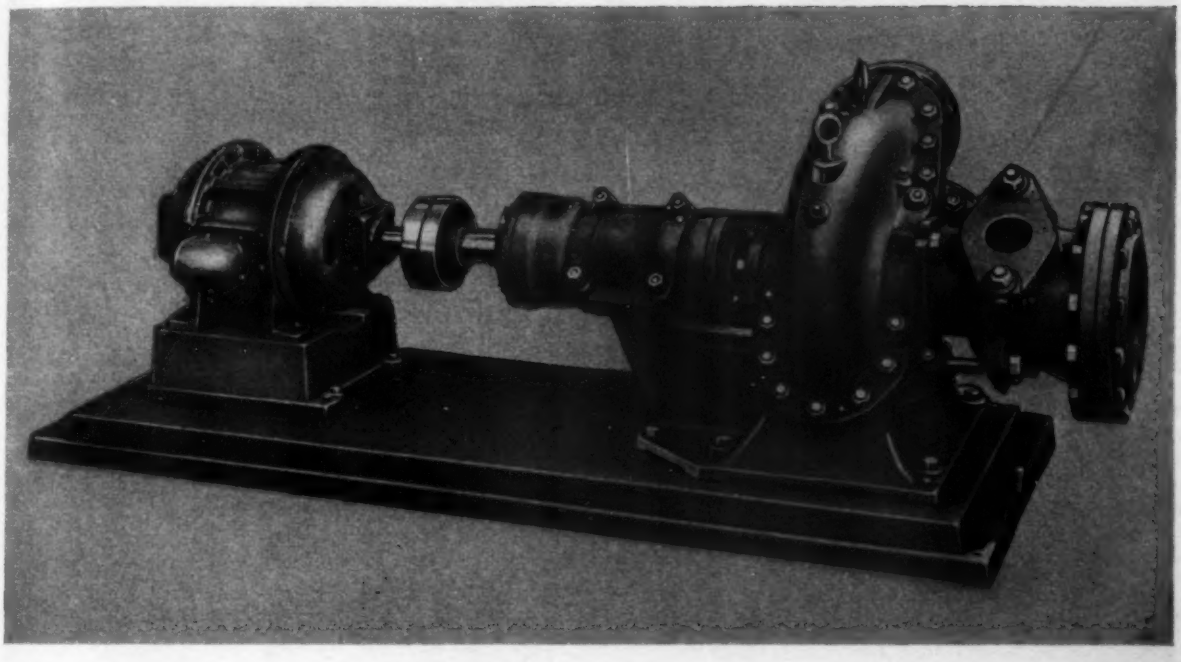
▶▶▶ TRUSTEES OF THE M. & O. PAPER COMPANY and subsidiaries, excluding the National Pole and Treating Company, report net loss of $2,062,956 for the 9 months ended September 30 after interest but before accrued depletion and depreciation. This compares with a net loss of $1,101,218 a year ago.

◆

▶▶▶ HEAVY CALLS FOR LOANS TO PAPER MILLS to meet the requirements for funds to repair heavily damaged mills are anticipated by the Washington offices of the Reconstruction Finance Corporation. Plans are under way at Washington to expedite action in all cases resulting from flood and hurricane damage. Two heavy loans have been authorized for the Middle West, including $400,000 for the Dunn Sulphite Paper Company, Port Huron, Michigan.

You cannot buy

A FINER STOCK PUMP THAN THIS



THIS Goulds Fig. 3105 Single-Stage Pump will handle stock up to 6%. Special features of design insure *extra* freedom from clogging, *extra* freedom from air binding, *extra* ease of cleaning, *extra* efficiency, and—in the long run—*extra* low cost. Heads to 180 feet—capacities to 2900 G.P.M.

90 years of successful pump manufacturing experience and an intimate knowledge of paper mill operators' needs are embodied in the design of this centrifugal stock pump.

This is but one of Goulds complete line of pumps for all requirements of the paper industry. Bulletin 206 describes them in detail and shows *why* you cannot buy a better stock pump than this. Write for it today.

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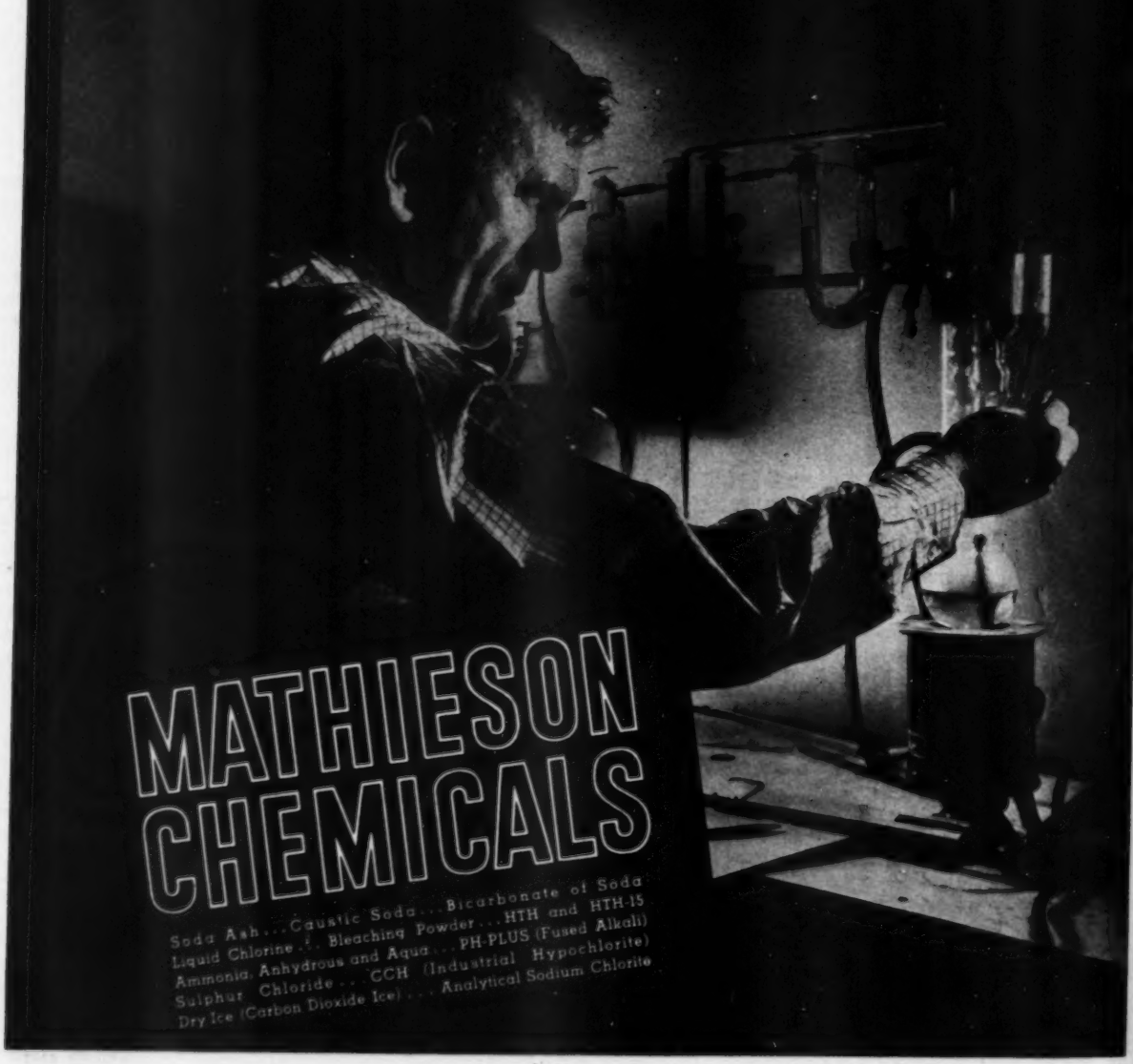
A MAN *in the "Lab"*

No cloisters of forgotten heroes are Mathieson's plant laboratories. Manned by solid citizens like capable "Doug" Shannon, Saltville chemist pictured here, these "labs" have played an important part in Mathieson's past record of achievement. And for the future, men like Shannon are an assurance that Mathieson Chemicals will continue to offer as great or greater value than they do today. The Mathieson Alkali Works (Inc.), 60 East 42nd Street, New York, N. Y.



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Liquid Chlorine . . . Bleaching Powder . . . HTH and HTH-15
Ammonia, Anhydrous and Aqua . . . PH-PLUS (Fused Alkali)
Sulphur Chloride . . . CCH (Industrial Hypochlorite)
Dry Ice (Carbon Dioxide Ice) . . . Analytical Sodium Chlorite

Editorial ★ ★ ★

RENEWED CONFIDENCE

▸▸▸ IT IS NOW A FULL MONTH since the fall elections and everybody feels better, safer, and has more confidence in the future of America—everybody except those defeated partisans of the New Deal and the bureaucratic holders of political jobs and sinecures which are in immediate danger of cancellation. As a result of the voters' emphatic decision at the polls, there will be no more juggling with the judiciary, no more rubber-stamp legislators servilely passing legislative enactments by executive decrees and less and less taxpayers' money diverted to buying enslaving elections. Truly, November 8 was the emancipation day for business.

As a result, confidence in America's future is returning. Every business index is testifying actively to that fact. The surest, happiest fact of all is that the enormous lake of frozen capital is already showing signs of an early thaw. Investors only invest when they are confident that their investments will not be sequestered by an envious, punitive, class-hatinng horde of bureaucratic politicians. That is the first requisite.

The second is that investors only invest their funds under conditions which reasonably assure them that their investments will return them a profit. During the past twelve months, prior to November, the country battled through a depression, as severe as any of its predecessors and due mainly to the fact that business men and investors had lost all confidence in the ability or intention of the present administration to protect private investments from loss of both earnings and capital investment. The depression was merely a forewarning of that lost confidence—the election on November 8 was its confirmation.

Of course, this is but the beginning of the return trek toward recovery. There is a long liquidating line yet to travel. The people of this country are going to be lucky if they can settle the New Deal experiment for a total cost of $50,000,000,000. Of course, it is a lot of money, but after all, it is only money and we have it to pay with—and we'll earn more.

The six-year battle was fought with ballots and not bullets, for which every thinking man is devoutly thankful.

The experience has vindicated the American way of settling domestic differences. It is the best way in the world. So, in this closing month of this epochal year, there appears to be abroad in this great land of opportunity and tolerance, a great expansion of renewed confidence in the traditions and customs which have raised America to its foremost place in the sun.

The people have made up their minds to return to the faith of their fathers. They have registered their confidence in the maintenance of American institutions which their forebears established. They are not wasting time in bemoaning the immediate past. They are consciously better for the fight. The recovery of confidence of the American people means the recovery of American business in a big way. The recovery of business means the return of prosperous conditions and the provision, for every man who wants to work, of a decent, self-respecting job on the American standard of living basis, the best living basis in the world.

EMPLOYEE MORALE

▸▸▸ IN THE FUNCTIONING of any business, it makes no difference whether the organization is one of only a few employees or whether it is one of the largest pulp and paper-making concerns in existence, no one factor is more important in its success than the general attitude of its working force toward it. Find a business in which the average employee is sold on the concern, on the product or products produced by it, and on the human relations policies of the establishment, and you will find a business that is an outstanding leader in its field or is definitely on its way to becoming such a leader. It is just one of those concerns in which the average employee is proud to work and manifests this pride by a beaming countenance and a radiant remark when asked as to place of employment.

There are many such places of employment, but it is regretted that there aren't many more. Most certainly, if management's attitude were right, there could be, and, as a result, employee morale would be stimulated and efficiency increased beyond measure.

It is so easy for policies of an employer to be misunderstood. It is so easy for an employer to look the part of a puma pouncing on a little lamb. It is so easy for an employer to be looked upon as an ungrateful wretch.

Fair dealings, and fair dealings alone, on the part of the employer would eliminate such thought from the minds of employees or would diminish it to near the vanishing point. Fair dealings by an employer cannot fail to build up an employee morale that is as sturdy as a venerable oak.

The need for improved employee morale is not just theory; it is a fact.

"Industry must 'open new doors between management and men' if employee morale is to be improved in the United States," stated E. B. Roberts, Assistant to the Vice President of the Westinghouse Electric & Manufacturing Company, before a recent conference of the American Management Association on office management. This assertion was based on the results obtained in an audit of employee morale conducted among 2500 employees of a Western Pennsylvania concern by an independent agency to insure the secrecy of individuals' opinions. The audit revealed to the company that it should make promotions more carefully; that it should watch out for favoritism; that it has been ineffective in informing employees; that it should re-study its work in definition of jobs, positions and organization line; and that it is placing too much emphasis on tangibles and neglecting intangibles—that material things alone are not enough—that workers want psychological satisfaction as well as material satisfaction.

CURRENT THOUGHT

WHAT OF 1939?

WILLIAM SIBLEY

WRITING in this space about a year ago, I voiced the fact that if general prosperity didn't reach its all-time peak in 1939 a one-hundred year cycle would be broken. Call it what you will—business-cycle, coincidence, or what-not—it is a fact that American business has repeatedly reached its highest peak every ten years and those years throughout the past century have fallen in years ending with 9: 1839-1849-1859-1869-1879-1889-1899-1909-1919-1929 . . . in every one of those years American business prosperity reached new high levels. Next year may be the exception, but I doubt it. I may be star-gazing, voicing wishful-thinking, or pinning my faith on an astrological myth, but I firmly believe 1939 will be an exceptionally good year. For a number of reasons:

▶▶▶ In the first place, there has been a strong current of recovery sentiment running throughout all industry for nearly six months. Since last October (aided pronouncedly by the recent elections in November) this current has become a virtual tide. And as more men are put to work, the consumer spending is increased with the result that still more men will be put to work.

▶▶▶ Secondly—whether we like it or not the world armament race is having its effect on practically all industries. During the spring of this year, we were shocked by the news that all nations, collectively, were spending about ten billions a year for armament. Now, the nations of the world are buying munitions at the rate of twenty-five billions a year—and the end is not yet. This armament race alone is causing a real revival in the heavy industries which in turn affects consumer goods. A symposium of expert opinion would have it that the first six months of next year will run forty per cent ahead of the best six months of any year in the thirties.

▶▶▶ A third factor which should have its effect during 1939 is the possibility of greater profits. Larger profits are in sight because during the recent recession business men everywhere have reduced expenses to the point where production costs per unit are much lower than ever before. And larger profits is the incentive for expansion of operations. Furthermore, the money for expansion is available. Bank deposits are high and interest rates are low. Bankers are eager to lend, and through the RFC and FHA the Government stands ready to provide capital.

▶▶▶ Nor should we forget government spending, the rate of which is rapidly increasing all of the time. During the month of September, this year, our Government spent fifty millions of dollars *more* than it took in. Instead of printing and distributing fifty million dollars worth of paper money, it printed bonds. But it spent the money just the same. This government spending is scheduled to increase month by month until the monthly deficits, by June of 1939, will amount to *six-hundred* million dollars. And that is per *month*, mind you. Never in all our peace-time history have we experienced such fantastic spending and it cannot fail to have some effect on business.

Sure—I know what you are thinking. You are thinking exactly as I do—that this driving force of unexampled spending is unsound, artificial and certainly temporary. Your thinking leads you to believe that after this government money has been spent, we'll be let down with the burden of greatly increased taxes. And you're right. This government spending is artificial and unsound. It must lead to greater taxes. And so far as the Government is concerned, the spending, of necessity, must be temporary. But what I personally believe will happen during 1939 is that private capital will so increase its flow that we won't feel the tapering off of governmental expenditures.

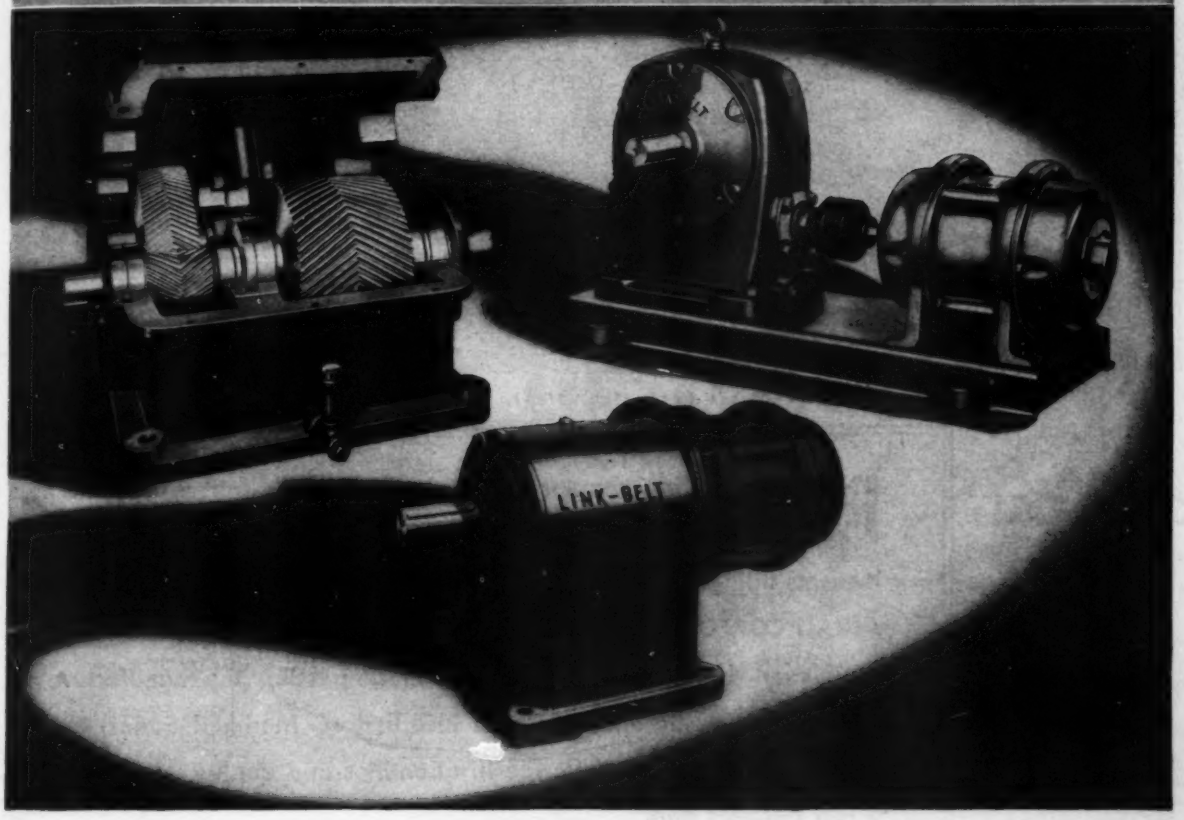
There is one thing about it though, while the sun of governmental and psychological impetus is shining, that doesn't mean the hay will make itself. You have got to sell more aggressively, and more intelligently and with greater speed than ever before. And you have got to boost your operating efficiency, too, because when business booms prices rise. Not only that, but during 1939, you will have to add to your high commodity prices the highest wages and the highest taxes in all history. Nor can all of these expenses be passed along to the consumer. Some one of your competitors is going to modernize both his plant and his methods. Because it is necessary, someone is going to learn how to absorb much of the higher prices, the greater taxes and the increased wages, and thereby get the gravy. Is there any especially good reason why that "someone" shouldn't be you?

There is another thing about 1939 that should be remembered and that is the fact that business curves rise and fall much more quickly than formerly. We used to think of depressions or business recoveries as being a long, gradual process. The declining curve of a depression or the rising curve of recovery reached their respective turning points only after a period of years—three, four or even five. But since 1932, our business curves have been extremely choppy. In just a very few months following the bank moratorium business shot up from a level of 40 to something past 100. And just this year we witnessed a depression which carried business almost as far down in four brief months as it went in the four years of 1930 to 1933. This changed condition calls for quick thinking and rapid action. During 1939, he who hesitates is likely to be lost. But he who steps up his operating efficiencies and sells harder and faster than ever before will surely come out of 1939 a richer man.

LINK-BELT

Speed Reducer Service

is UNBIASED *and* COMPLETE



● The three improved types of reducer units included in the Link-Belt line — Herringbone Gear, Worm Gear, and Motorized Helical Gear — meet today's needs for the dependable transmission of power at accurate speeds. They are built in a large variety of sizes, ratios and horsepowers. Call in a Link-Belt positive drive specialist to help you select the most efficient unit for your requirements. Send for catalogs on these and other Link-Belt positive drives.

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Recent Air View of Barberton Plant, THE COLUMBIA ALKALI CORPORATION

Through The Centuries With Alkalies...

TWENTIETH CENTURY

IN this concluding chapter of a series tracing the part which alkalies have played through the ages in the development of many industries, it seems fitting to picture the present Barberton plant of THE COLUMBIA ALKALI CORPORATION as an example of current achievement in alkali production. Here modern science has made possible the manufacture of Soda Ash, Caustic Soda, Sodium Bicarbonate, Modified Sodas, Liquid Chlorine and Calcium Chloride in quantities and quality undreamed of a few decades ago.

COLUMBIA

SODA ASH
CAUSTIC SODA
SODIUM BICARBONATE
MODIFIED SODAS
LIQUID CHLORINE
CALCIUM CHLORIDE

THE COLUMBIA ALKALI CORPORATION

BARBERTON • OHIO

NEW YORK · CHICAGO · BOSTON
ST. LOUIS · PITTSBURGH · CINCINNATI
CLEVELAND · MINNEAPOLIS · PHILADELPHIA

The author has a background that gives him a keen insight into the realm of human behavior. He has served his time as works manager as well as advertising and sales manager in industry; and is now chairman of the board of Evans Associates, Inc., Chicago, a well-known marketing, management and public relations organization. Mr. Evans is also working with a voluntary group of engineering students at the University of Wisconsin, known as the Evans Professional Group, to develop a wider interest in the problems of handling people and to bring these students closer to industry.

Profits in Attitudes

MELVIN J. EVANS

BUSINESS management today is concerned as never before with the ever-important problem of profit. Competition is intense—taxes continue to increase. The manufacturer finds himself between an upper and nether millstone growing closer together daily, competition on one hand and increasing costs on the other.

In the well-organized plant, every possible scientific skill has been devoted to improved machinery and better methods. The laboratory is the workshop where new materials are eagerly explored. An army of salesmen ceaselessly knock at the door of every manufacturer, pressing on his attention new and improved machines, methods, and materials. The effect of the collective effort of this great army of business missionaries is immense.

Although there is still much to be done in all of these directions, there remains a vast area of possible accomplishment in the field of improved understanding of the most important factor in the whole business equation—the human element.

We are all familiar with the tremendous strides that have been made by the safety engineer. The industrial engineer has touched the fringe of the human problem in his work on time studies, wage payment plans, etc., and, of course, many concerns have large personnel departments studying this problem intensively. But in too many cases, we are dealing with the superficial phases of the problem, rather than the underlying causes.

▶▶▶ A large eastern manufacturer recently found that one of his plants was showing a rapidly increasing accident rate, with resulting increase in insurance costs. A careful study was made of the situation, and each accident was studied to determine the original underlying cause.

Problems brought on by the health of the employee or of his family were found to be the chief reasons for the trouble. Next in line were financial worries. In the majority of cases, the employees' mental attitude had been seriously disturbed through worry over health or over temporarily reduced physical strength. Instead of beginning his day's work with an attitude of confidence and enthusiasm, his attitude had been one of depression, and consequent lack of vigor and close attention to detail; the result was needless injury to the employee, and needless cost to the employer.

A part-time doctor was retained to give attention to the physical problems of the employees and facilities were provided to tide over those having temporary financial needs. These were the chief moves in a program that reduced insurance costs in this plant $160,000 per year. The cost was trifling when compared to the amount saved. Furthermore, a new spirit of team-work and co-operation was born. Management and men were brought closer together in a new realization of the fact that one cannot suffer without affecting the other seriously.

Daniel Willard, president of the B. & O. Railroad, is credited with the statement that the foundation of enduring human relations is a willingness to put oneself in the other fellow's shoes—in other words, an "attitude" of tolerance, fair play, co-operation, and sincere friendliness.

If one studies carefully the problem of industrial rela-

tions, the more evident it becomes that this matter of proper attitudes is at the bottom of every situation.

An attitude of fair play will spread like wild-fire in a plant where management gives it encouragement. Likewise, petty chiseling or trickery kills every worthwhile impulse. But the all-important fact that is too frequently overlooked or misunderstood is that these correct attitudes pay enormous dividends to both management and men. Management reaps its reward in lowered overhead, reduced costs, fewer rejects, and increased profits. If correctly understood and applied, the individual reaps similar personal profits in more rapid promotion, increased pay, and last, but far from least, in that deep personal satisfaction that comes from a life that is well lived—completely in tune with those forces that control the universe, that guide the stars in their myriad ways and order the tides.

▶▶▶ A young engineer was employed by a large paper mill a few years ago as a specialist in lubrication. Technically, his work was excellent and he effected many economies; but after a few months, complaints began to come from foremen in the departments where he was working. He seemed unable to "get along" with anyone, in spite of well-directed efforts on the part of a well-organized personnel department.

The discord grew until it became necessary to drop him from the payroll. Since that time he has had numerous jobs, but he has been unable to stay anywhere very long. Why? The man was so hopelessly self-centered that no one counted but himself and his own ideas. His attitudes were hopelessly across the grain in an organization where harmony prevailed. Today he blames everyone but himself for his predicament. He is sure that the world has a grudge against him. Actually, just the reverse is true . . . the world welcomes with open arms the man who approaches it with confidence in his own ability, with a broad appreciation of the rights of others, and with a cheerful willingness to work with others for the common good.

In spite of technical success, this man failed because he neglected completely to develop his personality—the foundation for success of the individual. He could not be permitted to continue in the employ of this company because a business is the combined personalities of many people. One seriously deformed personality can injure the organization—just like a single grain of sand scores a bearing.

▶▶▶ The story is told of the California farmer who sold his farm when gold was discovered in southern California and went prospecting. Later millions of dollars in gold were taken from his old farm by others. He didn't think to find riches in his own back yard. In like manner, many individuals fail to realize that in their own personalities, lies hidden wealth, beyond their fondest dreams—not only a wealth of satisfactions, but financial rewards.

▶▶▶ Some years ago a young Texas farmer left home to seek broader opportunities in a small nearby town. He had $85 in savings and a grammar school education. Upon arriving in town, he took a portion of his savings and bought enough second-hand sheet iron to build a crude shelter near a highway. He then persuaded a gas company to loan a pump and equipment. His few remaining dollars he deposited in the local bank. Leaving the bank, he noticed that the president's car was dusty and asked permission to rub it off. This granted, he made it a daily task without asking anything in return. It wasn't long, however, before the president of the bank was buying his gas and oil from the cheerful, helpful young stranger.

Similar tactics were used on other citizens. In a few years, he had the largest filling station in town, easily passing established competition. Again one may ask . . . Why? Because he started his business life with a friendly, helpful attitude toward those around him. The reward was instantaneous. He retired recently, a comparatively wealthy man.

Obviously, we must not overlook other important qualities in his character, such as hard work, careful attention to business, and an ability to save money; but nevertheless, the outstanding differences between this man and his competition was one of attitude, as it was in the case of the man who failed.

We get out of life just what we put into it. If our own lives are characterized chiefly by indifference to the rights of others, chiseling, hatred, and suspicion, we need not be surprised if we reap in a like manner. By the same process, if we are industrious, co-operative, friendly, we will be surprised at the helping hands that will be stretched out to help us on our upward way . . . but we must first establish the proper attitude and put forth the necessary effort freely and energetically and not in a niggardly way.

The man who makes a few feeble gestures in the right direction and then sits down to await his reward is obviously doomed to disappointment, and deservedly so. He has failed to achieve the spirit that must be the ultimate goal of anyone desiring a successful personality. With the proper attitude as a foundation, the personality grows and unfolds beyond all expectation.

▶▶▶ A prominent executive in a large mid-western city has long taken an interest in young men and their business problems. Some years ago a young man came to him completely discouraged and ready to quit. He was a graduate of a large eastern university and the son of a very successful father. He was working as an attendant in a filling station, but felt that his talents were completely unappreciated. He saw no opportunities ahead of him and thought his situation hopeless.

After listening to his story, the advisor's first comment was that in his opinion the young man should be fired—that he was not giving his employer his money's worth. The amazed youth explained that he was doing everything as he was told—and faithfully. "But," explained the older man, "the spirit in which you are doing it is all wrong. In return for the money he is paying you, your employer is entitled to enthusiastic service—yours is purely mechanical." They spent several hours exploring the countless opportunities that exist in the lowliest job, for making friends and for advancing the company's interests. The young man returned to work with a new outlook. Instead of a drab routine of dull, uninteresting work, it now presented countless opportunities to build a secure foundation for his own future success, through achieving similar results for his employer.

In less than a year's time this station was competing with two others for sales supremacy in the territory, because of the changed attitude of one man. He is now division sales manager for the company at a salary close to $10,000 per year.

This simple change in attitude brought him substantial rewards and brought his company even greater rewards.

The extent of the success of the individual rests on his ability and personality. The extent of the success of any company rests squarely on the combined abilities and personalities of all of its employees—management and men alike. Their interests are inextricably entwined—they prosper or suffer together. Their interests are the same if viewed in the light and understanding of proper attitudes.

We have only scratched the surface of this great mine of industrial wealth—wealth and satisfaction for the employee and profits for the company. The time has arrived when we cannot afford not to work this mine. To neglect it long may be fatal; to work it intelligently and consistently will pay greater rewards than anything industry has yet attempted.

Sulphite Digester Hang-Ups

WILLIAM S. HODGSON

AT some time or other, nearly every sulphite digester operator has had a digester hang-up, that is, some of the pulp of a charge left in a digester after blowing.

Too rapid steaming of the digester at the start of the cook is the main cause for such a hang-up. Too rapid steaming bores a hole through the center of the chip charge, and, once the hole has been made, there is little the operator can do to overcome the difficulty. Probably the best procedure is to close the steam valve for a few minutes to allow the chips to settle back, and then to open the steam valve sufficiently slowly to prevent the steam from blowing through the charge again at the same place.

This problem is more common in mills where wet wood is used than in mills which use wood that has been seasoned and thus permitted to dry out. The wet chips are heavier than the dry chips, and, therefore, they require more steam at the start of a cook to develop circulation. Dry wood, on the other hand, absorbs more acid than wet wood, even when a digester is pumped full. Dry wood may take up so much acid that not enough is left to secure good circulation. The use of a liquid level recorder, however, will permit the acid volume to be kept at a predetermined level.

Steaming a digester charge too slowly at the beginning of a cook also will cause the steam to cut through the chips. This practice results in improper circulation along the inside of the bottom cone, a condition which may cause a hang-up at the time of blowing.

Another cause of a hang-up is the use of an acid too weak to secure good penetration. An acid of this kind will cause part of the chips in the bottom cone to lie dormant, which results in a retarded circulation in this area as contrasted with the rest of the digester.

According to some operators, the packing of chips into a digester too tightly in order to secure more pulp per blow, also results in retarded circulation in the bottom cone area of the digester. This claim probably is true only in part. Very wet wood, or more likely the size of the chips, has more to do with this condition than does too tight packing of the chips. If the chips are not uniform in size, if they contain a lot of fine slivers and sawdust, the digester will be hard to start and it will be difficult to get good circulation. Some pulp also will lie in the bottom cone, if the angle of the cone is too flat. Little can be done to improve such a situation except to increase the angle of the cone.

Insufficient liquor may be left in the digester to carry the pulp out at the time of a blow if too much is withdrawn during the period that the side relief is in operation, the amount of pressure on the digester at the start of the blow making no difference. A high pressure, however, is more liable to cause a hang-up than a low pressure; since, when the pulp is nearly out of the digester, there is still considerable pressure on that which is remaining. If this pressure is too high, it will blow a hole through the remaining pulp and leave it around the inside of the bottom cone.

Pulp left in a digester after a blow, for whatever reason, must be removed previous to filling the digester for the next cook. This operation can be done by washing the pulp from the digester into a tank or onto the floor under the digester. The digester also can be re-blown. To re-blow a digester, water is added to the remaining pulp until it is covered, the digester cover is then put back on the digester, and steam is turned on until there is sufficient pressure within the digester for completing the re-blow. The re-blowing is done in the same manner as for a regular blow.

It is fairly safe to state that if good digester circulation is secured, and, if there is proper steaming of the charge and proper use of top and side relief, there will be no trouble with hang-ups. However, there are many things which can happen, and sometimes it is impossible to prevent them.

Proper circulation at the time a cook is started cannot be overemphasized, as it means correct steaming. There also should be a positive means of showing whether good circulation is secured. In the case of a digester with forced circulation, for example, it is known that the liquor within it is circulating, but it is not known if it is circulating evenly throughout the entire chip charge.

In some mills, a digester is partly filled with chips and then the acid valve is opened to admit some acid previous to adding the rest of the chips. This practice, it is claimed, prevents the chips from packing too tightly in the lower part of the digester. It also is claimed to hasten the liquor penetration of those chips which are steamed first.

Shaking up a digester at the end of a cook by opening the steam valve sometimes helps to prevent a hang-up. No amount of shaking up of a digester, however, will do any good if liquor penetration of the chips in the lower part of the charge has not been good. All that such a shaking up would do under the circumstances would be to waste steam.

In spite of the numerous things which can happen to cause a hang-up, little trouble will be experienced from such a thing if a cook is started in the proper manner, and if correct relief is maintained throughout the cooking cycle.

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GLYCERINE IN RECORDING-INSTRUMENT INKS

WITH the currently increasisng usage of recording instruments in modern industrial procedure, research by National Bureau of Standards indicating the advantages of glycerine in inks to meet the special requirements of these sensitive instruments is of general interest.

Instruments for making continuous records of temperature, barometric pressure, steam pressure, electric voltage, gas consumption and the like, are often required to run continuously for long periods of time. It is essential, therefore, that these instruments have an ample supply of ink that will not dry on the pen or freeze during cold weather.

For many years the U. S. Weather Bureau has used recording inks made simply by dissolving a dye in a mixture of equal parts of glycerine and water. In some parts of the country a small percentage of alcohol is also added.

In a series of experimental tests it has been found that for indoor use a mixture of one volume of glycerine or glycol with three volumes of water is a much better solvent than a mixture of two equal parts of the two liquids. The test further showed that ethylene glycol is not as good as glycerine in either dilution. The experimental work further indicated that as far as possible only the direct dyes should be used in the aqueous glycerine solutions. The use of such coloring agents prevents feathering and tends to produce clear, legible lines on the recording charts. (From *Glycerine Facts*, published by the Glycerine Producers' Association.)

Cellulose Research, 1933-37

LOUIS ELSBERG WISE, Ph.D.

PART III—CELLULOSE MODIFIED BY HYDROLYSIS AND OXIDATION

In certain industries, in which wood-pulp and cotton are used with the minimum amount of chemical change (e.g. in paper and textile production), hydrolysis and oxidation are avoided as far as possible. In other industries (e.g. lacquer and rayon), oxidation may be resorted to quite deliberately. In any event the importance of the so-called hydrocelluloses and oxycelluloses is manifest, and has occupied the attention of a number of chemists—especially those connected with textiles.

Hydrocellulose

Native cotton cellulose has a very slight reducing action on alkaline solutions containing cupric salts. This reducing power has been termed the "copper number" and is recorded as the number of grams of metallic copper reduced from Cu++ to Cu+ under very carefully standardized conditions *(1)*.

In cautiously purified cotton cellulose, the copper number may be as low as 0.02 gram. If a giant cellulose molecule *(2)* with a large number of glucose residues is assumed, this copper number is presumably due to a single terminal group. Such a reducing group is insignificant in amount when compared with the molecular weight of the entire molecule. Hence the copper number is very low. In the simple sugar glucose, which is formed quantitatively by the *complete* acid hydrolysis of cellulose, the copper number is about 300 *(3)*. Somewhere between the cellulose of negligible copper number and glucose, lies the region of the so-called hydrocelluloses, a water-insoluble mixture of *partially* hydrolyzed cellulose. The simplest way of picturing them is in the form of products in which the glucosidic linkages in the giant cellulose molecules have been ruptured. This means that the mixture contains fragments having lower molecular weights than that of untreated cellulose. It also means that the acid treatment has caused a decrease in the lateral cohesion between the fragmented chains. This results in slippage and an enormous loss in tensile strength.

It should be emphasized at the outset that *hydrocellulose is simply a convenient group term. No chemically pure hydrocellulose has ever been identified.*

In 1933, Neale *(4)* showed that a cotton, with an initial copper number of 0.02 when treated with hydrochloric acid so that the copper number reached 2.44, dropped in tensile strength from 4.9 (dynes/cm^{2}x10^{-9}) to 1.5 (dynes/cm^{2}x 10^{-9}). When the copper number reaches 5.0, the hydrocelluloses are readily pulverized and their tensile strength is negligible.

The characteristic viscosity of cellulose in cuprammonium solution is also of marked importance. Staudinger *(5)* and other workers believe that the viscosity of dilute cellulose solutions is a measure of the molecular chain length. This hypothesis depends on the assumption that the macromolecules do not associate to form larger micelles in such dilute solutions (and that possible "networks" are not formed or preformed). Assuming the truth of this working hypothesis, the viscosity of a hydrocellulose solution would be a function of the average chain length of the cellulose fragments in the hydrocellulose mixture.

The British prefer the term "fluidity" (which is the reciprocal of absolute or relative viscosity). In the case of a given hydrocellulose fluidity bears a direct relation to copper number and to alkali solubility; and increases with decreasing tensile strength.

While *cellulose*, which has been carefully purified is practically insoluble in *cold*, aqueous NaOH, (2*N*-4*N* NaOH), *hydrocellulose* becomes partially soluble. With increasing copper number, this solubility increases, and quite possibly the smaller fission products of the original long chain molecules are peptized by the alkaline solutions. This degree and type of peptization is correlated with alkali concentration and temperature. However, when these factors are kept constant the amounts of *hydrocellulose* removed by alkali increases progressively with increased hydrolysis. Thus, hydrocelluloses may be fractionated into fragments above and below a certain *average* chain length. The copper number of the alkali insoluble residue is lower than that of the "unfractionated" hydrocellulose; that of the alkali-soluble portion is higher. This bears out the assumption that the cold alkaline solutions remove the smaller hydrolytic fragments.

It is very important to emphasize the fact that such alkaline treatments are carried out in the cold. Even with hot 1 per cent NaOH, hydrocellulose is not only partially dissolved but chemically degraded. The nature of such degradation is beyond the scope of this paper.

An interesting development in alkali solubility of modified cellulose involves the use of zinc oxide in NaOH. Quantitative experiments *(6)* were made with varying ratios of ZnO/NaOH, varying temperatures, and different fluidities. The addition of ZnO actually increased the solvent action of the NaOH. Maximum solubility was obtained at certain concentrations of NaOH, and these maxima increased with increasing molar ratios of ZnO/NaOH. Lowering the temperature (to —5 deg. C) greatly increased the solubility in sodium zincate solutions. It is evident that sodium zincate furnishes a more delicate tool for measuring cellulose modification than does aqueous NaOH alone. However, ZnO in KOH is less effective. While sodium beryllate showed effects qualitatively similar to those of sodium zincate, the solvent action is usually less enhanced. Sodium aluminate in NaOH actually depresses the solvent action of the latter.

Davidson *(7)* has also made extensive comparative studies of the "solvent action" of LiOH, NaOH, KOH, and tetramethylammonium hydroxide on modified cellulose. The solvents first and last named have an action qualitatively similar to that of NaOH, but the solvent action of KOH is decidedly less marked. At ordinary temperatures the order of increasing solvent action was LiOH<NaOH<N$(CH_3)_4$OH. At low temperatures, however, the order is N$(CH_3)_4$OH<LiOH<NaOH. As temperatures decrease, the maximum solubility in these solvents increases and also occurs at lower concentrations. Until the swelling action is fully understood the so-called solvent action of the various alkalies awaits explanation.

That all investigators are not in agreement regarding terminal groups in hydrocelluloses (which *most* researches show are aldehydic or hemiacetal groups) is indicated by the work

ot Marchlewski and Skulmowski *(8)*. These chemists prepared hydrocellulose by the action of fuming HCl on α-cellulose, and purified it by precipitation from an aqueous NaOH solution with acid. This product was then studied optically in 2*N* NaOH solution. A continuous absorption spectrum of these solutions indicated the absence of free selective groups (like the aldehyde grouping). Longer interaction with NaOH changes the spectrum causing a further degradation (shown by increased copper number). The viscosities of benzylated and acetylated hydrocelluloses were also studied. These data, the investigators feel, confirm the finding of Hess that the aldehyde groups are absent from hydrocellulose.

Staudinger and Sorkin *(9)* have recently studied the action on cotton of various acids ranging from boric acid and $NaHSO_3$, through acetic acid, formic acid, to H_3PO_4, $NaHSO_4$, H_2SO_4, HNO_3 and HCl, at 53 deg. C., for time periods ranging from one to 120 hours. The effect of this treatment on the physical properties of the modified fiber, and on the degree of polymerization were noted. The latter decreases with time (*i.e.* the macromolecules become shorter). The physical properties of the fiber decrease slowly above a degree of polymerization of 700-800. Under 600, the rate of decrease is rapid. The indication is that the physical properties are associated with the average size of the chain molecule. When hydrocelluloses reach low degrees of polymerization (80 to 470), they become soluble in 2.8 *N*, NaOH and 2.5 *N* LiOH, and the viscosities in such solutions are roughly 10-20 per cent higher than in Schweizer's reagent. The assumption is that the *state* of solution is the same in all three peptizing agents, and the conclusion is that such hydrocelluloses are dissolved *as molecules* by the alkalies.

Wolfrom and Georges *(10)* recently followed polarimetrically the hydrolysis of cellulose by fuming HCl at 23 deg. C. The rate of increase of the rotation from zero to that of glucose (about [α]D+100) was a continuous function. At an early stage of the hydrolysis (about [α]D+25), the viscosity of the solution approximated that of a solution containing an equivalent amount of *d*-glucose. When cellulose was hydrolyzed at 16 deg. (in a 6 per cent concentration) in fuming hydrochloric acid, studies were made of the interaction of ethyl mercaptan with the cellulose solutions at various stages of the hydrolysis. Simultaneously, polarimetric data were obtained and experiments were made to determine the best procedure for the mercaptalation of glucose. This was used in the cellulose reactions. The average molecular size of the mixtures of mercaptalated products isolated from the hydrolysis was determined. The data indicate that the formation of very small units proceeds with amazing rapidity. When the hydrolysis was at the half period, the products isolated corresponded to a trisaccharide. Glucose diethyl mercaptal made its first appearance when the hydrolysis was about two-thirds complete. Thereafter, the amounts increased gradually.

From the investigations referred to, with a few exceptions, there appear to be a correlation between the extent of hydrolysis in the formation of "hydrocellulose" and the copper number, the tensile strength, the alkali solubility and the fluidity. The simplest assumption is that the site of hydrolysis is solely at the oxygen bridge connecting one glucose residue with its neighbor; in other words, that hydrolysis results in the fission of the glucosidic linkage. This may be an oversimplification, but for the time being it appears to be the most reasonable hypothesis. However, it would not explain the conclusions reached by Marchlewski and Skulmowski.

Oxycellulose

On mild oxidation cellulose yields a mixture of products, some of which are insoluble in water. This water-insoluble mixture, termed "oxycellulose," cannot be sharply characterized. Assuming a long chain, macromolecule for cellulose, in which the anhydroglucose unit may be repeated anywhere from 100 to 3500 times, and realizing that each of these units contains one primary and two secondary alcoholic groups, it is obvious that an almost infinite number of oxidation products are possible. The primary alcohols may form either aldehydes or acids; the secondary alcohols may be converted into ketones on oxidation, with further progressive degradation *within* a given anhydroglucose unit. Then too, hydrolysis may cause glucosidic fission *followed* by oxidation. And to make the whole picture more complex, some of the oxidation products are extremely sensitive to alkalies, and change readily in alkaline media.

A homogeneous oxycellulose is out of the question. However, the oxycelluloses have been explored with a certain degree of success. Naturally there are no general correlations possible between oxidation and physical and chemical properties, as in the case of the hydrocelluloses, where only one type of chemical reaction seems to obtain.

By the use of one specific oxidizing agent progressive oxidation frequently causes a progressive decrease in tensile strength, and also in viscosity. Often the copper number increases, and if this is the case, the increase may be due to oxidation within anhydroglucose units of the cellulose molecule. Davidson *(11)* cites the case of a cellulose subjected to cautious oxidation with dichromate, in which the product had a copper number of about 5, but a tensile strength corresponding to 80 per cent of the original cotton. This indicates that oxycelluloses *may* have appreciable copper numbers without appreciably shortening the molecules. Hydrocelluloses having this same copper number would have a tensile strength of zero. But there are other types of oxidations, leading to oxycelluloses with copper numbers below 5.0, the tensile strength of which is also zero. Obviously, generalization regarding the correlation of copper number and tensile strength of oxycelluloses are impossible.

Theoretically, it is conceivable to have marked oxidation of cellulose without any change in copper number of the cellulose. While the writer has never found such an ideal case, Neale describes an oxycellulose *(12)* obtained by using NaBrO, the relative fluidity of which was 20.7 times that of the original cellulose and copper number of which was only 0.5. On the other hand, he also describes an oxycellulose prepared by using HClO, the relative fluidity of which was 19.4, and the copper number of which was 3.4. The significance of the copper number in oxycelluloses is always a dubious one.

The exceedingly important work of Staudinger and Juresch *(13)* on cellulose oxidants has already been fully abstracted; hence only the briefest reference to it should be given here. For details, the interested reader is referred to *The Paper Industry*, February, 1938, pp. 1317-1319. These authors found that the rate of oxidation depends on the *type* and concentration of the oxidizing agent, and on the conditions of treatment. The degree of polymerization (as gaged by viscosity measurements) drops rapidly when calcium hypochlorite and chlorine water are used. ClO_2 on the other hand is relatively mild in its action. When ClO_2 is used in the presence of pyridine, oxidation is exceedingly slow. H_2O_2 is a rather mild oxidizing agent. $KMnO_4$ is powerful in its oxidizing action. It is interesting to note, from Staudinger and Juresch's work, that when a *very powerful* oxidant like calcium hypochlorite is used *very cautiously* as a bleaching agent, the degree of polymerization may be changed very little. In one case, a commercial cotton yarn was adequately bleached with a low concentration of hypochlorite, and the degree of polymerization changed only from 2680 to 2180.

Chemists have distinguished between two extreme types of oxycelluloses. One of these (termed I) has a relatively high copper number, and does not adsorb readily basic dyes (like methylene blue). The other (termed II), has a low copper number and marked affinity for methylene blue. An infinite number of oxycelluloses are between these two extremes. In general, I has an accumulation of carbonyl groups; II is characterized by carboxyl groups. Gradual oxidation in series I may, under carefully controlled conditions, give a progressive increase in copper number, fluidity and solubility in cold alkali. II may show a steady increase in methylene blue adsorption. No comparison of quantitative data obtained from I can be applied to II. The nature of the oxidizing agent, its concentration, the intensity of acidity or alkalinity, the fluidity of the original cellulose, the temperature, and interaction time must all be known. And there is no simple relationship between fluidity, tensile strength, copper number, and alkali solubility, as in the case of the hydrocelluloses.

Oxycelluloses of type I, when *heated* with very dilute alkali (or even with water or with soap solutions) show a drop in tensile strength. There is no marked loss in weight when water or soap solution is used, I is also degraded by *cold* alkaline solutions. This interferes with a correlation between fluidity and tensile strength. The reason is to be found in the fact that the cuprammonium solutions in which viscosities (fluidities) are determined are alkaline and give rise to degradation of the oxycellulose.

Oxycelluloses of type II when boiled with aqueous NaOH, show relatively little change in either fluidity or tensile strength.

What has been said above about the increased solubility of modified celluloses in NaOH—sodium zincate solutions applies especially to the oxycelluloses *(21)*.

Certain aspects of the oxidation of cellulose have been reviewed and discussed by Taylor *(14)*. One of the most interesting points made by this author is the acceleration caused by certain lenco vat dyes on the hypochlorite oxidation of cellulose. This appears as an example of a principle applying to many oxidations. Given an oxidizing agent and an oxidizable substance, the rate of the oxidation of the latter could often be increased by the introduction of a third (more readily oxidizable) compound.

More recently Nabar, Scholefield and Turner *(15)* have made further studies on the hypochlorite oxidation of cellulose in the presence of reduced vat dyes. The accelerated oxidation was compared to unaccelerated oxidation, and the pH, viscosity, copper number, carboxyl content, alkali solubilities and oxygen consumption were measured. The curve for the relation between pH and net oxygen consumption is similar in shape to that of pH and oxidation potential. There is a linear relationship between oxygen consumption and oxidation potential, and the amount of oxygen consumed is proportional directly to copper number and carboxyl content. The degree of modification of the cellulose increases directly with the concentration of the dye used as accelerator. The ratio between carbonyl and reducing groups was constant. Other relationships were also studied.

Jermolenko and Bondarin *(16)* oxidized cellulose by means of bromine and iodine, alone and in the presence of protective colloids like dextrin and gelatin. The latter are adsorbed, and cause a decrease in oxidizing action.

From what has been said regarding the differences between oxycelluloses prepared under varying conditions, it is obvious that no universal qualitative test exists for distinguishing between oxycellulose and hydrocellulose. However, in oxycelluloses of type II, uronic acids may be formed on acid treatment, which will decompose further into furfural and CO_2. Acid oxidizing agents (and also $KMnO_4$ acting on cellulose in cuprammonium solution) often give rise to oxycellulose of this character. For a very brief discussion of other products derived from oxycellulose, the reader is referred to Gilman's *Organic Chemistry (17)*.

An improved ferricyanide reagent, with details for its use was reported by Ermen *(18)*.

Ditz and Ullrich *(19)* have studied the effect of Nessler's reagent on cellulose oxidized by hypochlorite and have shown that the colorations obtained vary depending on the copper number. For example, a slightly oxidized product (copper no. 0.09) gave a yellow color, one with a copper number of 0.44 gave an orange coloration. A third, with a copper number of 3.22, gave a grayish-brown to grayish-red. Finally, an oxycellulose having a copper number of 4.15 gave a dark gray color. All of these were observed at the end of 30 minutes. The various reactions leading to these differences are discussed at length. The final gray color is due to metallic mercury.

Heermann *(20)* has made a critical review of certain practical tests for determining oxycellulose. Products of type I are most satisfactorily determined by a silver reduction method (analogous to copper number). Products of type II are best determined by methylene blue (referred to above). He also discusses the purple of Cassius (gold purple) reaction. However, it is clear that no unequivocal oxycellulose determination is really possible.

The foregoing is a brief and limited resumé of some of the more interesting developments in the study of partially hydrolyzed and partially oxidized cellulose. It is the final paper in the series: "Cellulose Research—1933-37."

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20) P. Heermann. *Rayon and Melliand Text. Monthly* 16 No. 9, 525-6 (1935); No. 10, 619-20 (1935).
21) For a complete discussion of the chemically modified celluloses, cf. G. F. Davidson, *J. Textile Inst.* 27, No. 1, 159 (1936).

This installment concludes the series of articles on this subject. Parts I and II appeared in the July and August, 1938, issues respectively of this magazine.—*Editor's Note.*

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▶▶▶ SALESMEN AND ADVERTISING must be kept on the job all the time to keep merchandise moving from factory to consumer, or the wheels will soon stop turning. The work of selling is just as important as the work of making and the work of transporting. And advertising is the only way by which the large volume of goods now being produced can be sold.—*Bureau of Research and Education, Advertising Federation of America.*

Two Old British Mills

VINCENT S. SMITH

ONE of the most consistent features in the manufacture of paper by British mills has been their pre-eminence in the making of rag papers. However, much industry may become mechanized and larger and faster machines brought into operation for the production of sulphite grades, the rag paper mills stubbornly have refused to be moved.

Apart from a slight speeding up in production, during the post-war years, most of the rag mills have not been seriously altered since the introduction of the papermaking machine. Admittedly they have added machines and made many improvements in the several stages of production but always quality, and not quantity, has been their guiding principle. Usually they have a century or more of history behind them and individually are mostly situated in some charming country spot, far removed from the hurry and bustle of the modern world—one which is most frequently missed by the speeding tourist.

The Golden Valley

Consequently, a visist to one of these mills, The Golden Valley Paper Mills, Ltd., necessitated a journey to the Old World city of Bath, a city noted for its Roman Baths, the only example of their kind which are supplied regularly by hot springs that throw up thousands of gallons of hot water daily. A wait there, for the half-hourly single decker automobile and a quiet journey along Bristol Road brought the visitor to Bitton, a tiny village, situated on Boyd Brook and the home of the mill.

This secluded country spot rests in a hollow where the water has been collected into a lake reservoir large enough to hold twelve million gallons and sufficient to supply the mill with the 30,000 gallons necessary each hour for steam raising and process work. The purity of this water supply is insured by an initial treatment with sulphate of alumina and other reagents to precipitate the dissolved vegetable impurities, followed by filtration through Bell filters to remove this precipitated matter and all other suspended matter, and finally by softening to about 2 degrees of hardness in a huge Kennicott Softener.

The original mill was erected nearly ninety years ago by a Scotsman, who, incidentally, himself succeeded an Englishman and an Irishman. Certain extensions to the mill were effected a few years later; but in 1878 misfortune reached it in the shape of a fire which completely destroyed the building. Happily this afforded the opportunity of rebuilding on a larger scale.

Early in the present century the mill was acquired by C. King-Smith, to whose energies were later added those of his sons, Captain R. King-Smith, D. S. O., M. C., and Philip King-Smith, both of whom can look back on a long line of papermaking ancestors ranging over six generations.

The mill possesses two machines, each nearly seventy inches wide and both equipped with size-tubs and air-dryers. Its productive capacity of fine papers is nearly 3,700 tons a year.

The general equipment of the mill is of modern type. The main power drive is taken by a 600-hp. tandem engine. Dynamos, operated by a 160-hp. high-speed vertical engine, generate the necessary electric power. With its several shops for repairing, carpentry and blacksmithing, together with its modern engineering works, this mill forms itself into a well equipped industrial organization sufficient to support a pay roll of nearly 250.

The mill uses only the finest linen and cotton rags, together with sulphite and sulphate wood pulps for the cheaper paper grades; but as its principal products are tub-sized ledger and account book papers and rag printings, its chief efforts are concentrated on them. Then, too, one of its specialties is sa new sizing which gives paper sized with it a particularly fine handle, strength and writing surface.

Golden Valley was one of the first to recognize the need for special air mail papers. Realizing that the extremely thin manifolds which were used at first were only suitable for exporters and that eventually the general public would be using air mail service, the mill devised a paper, which, being tub-sized, is suitable for both typewriting and penmanship; and which through the use of titanium oxide in the furnish gives a sufficiently high degree of opacity to permit writing on both sides of the sheet without show-through. Consequently eight pages quarto and accompanying envelope can be used without exceeding the British minimum of half an ounce for three cents. The shades chosen for the paper are a very fine white and an attractive buff, which are restful to use and yet give maximum prominence to the type.

More recently the mill has sponsored a new venture in

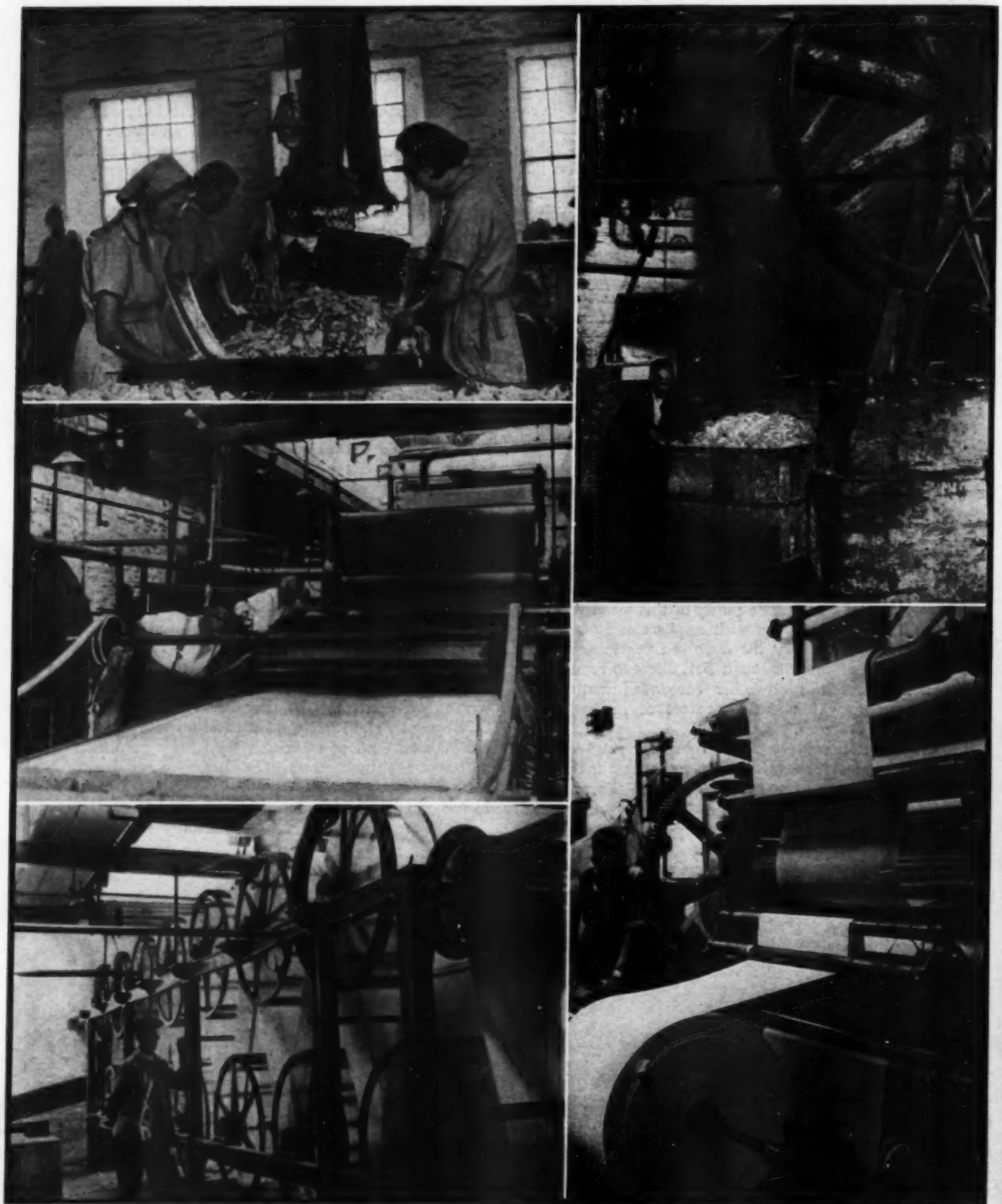
No. 3 Paper machine (left) and sorting room at Woolfold Mills.

which paper closely resembling true vellum is being made.

Like all countries, where printing has grown rapidly over the past century, Great Britain relies chiefly upon wood pulp papers for printing purposes. Groundwood papers are commonly restricted to newspapers and a few of the more popular journals; while sulphite papers form the real backbone of commercial and other printing.

Woolfold—One of the Oldest Mills

Production of the necessary quantities of sulphite papers rests with a relatively small number of mills. One of these mills is the Woolfold Paper Mill, Bury, Lancashire, a mill owned by Olives Paper Mill Company, Limited, and situated in a valley below the main Bury-Tottingham Road.



In the plant of the Golden Valley Paper Mills at Bitton, England, a camera picked up these interesting scenes: rag cutting and separating; rotary digester; fourdrinier wet end; skeleton roller dryers, and calender.

Formerly, the water used at this mill was drawn solely from reservoirs situated in the valley. During recent years, an artesian well with a capacity of 15,000 gallons per hour has insured an additional supply of the finest quality.

Woolfold is one of the oldest paper mills in Great Britain and initially produced its papers from rags. Later it used straw and esparto grass. With the entry of wood as a paper-making fiber, however, Olives Company erected a mill for pulping it. With the "march of time," the mill saw the utility of wood being pulped near the forests and consequently now obtains its pulp from outside sources.

The actual paper fabrication at the mill is effected on three Walmsley fourdrinier machines, each of which can produce a sheet of finished paper ninety inches wide. The mill's total annual capacity is over 8,000 tons.

Steam requirements of the mill are met by five mechanically-stoked Lancashire boilers. These boilers supply steam to a 15,000 kw. turbo-generator, the low pressure steam discharge from which is sufficient to meet the process requirements of the mill.

Preliminary treatment of raw materials, in breakers and poachers, bleaching plant and half stuff plant, leads to eight Manson and Scott Tower beaters, which with their auxiliary concentrators and strainers, supply the stock to the three machines.

After the paper leaves the machines, it is re-wound, calendered where required, slit and cut, these operations leading to the Salle, where girls expertly scrutinize every sheet to discover any blemishes which may have occurred in the process of manufacture. The slitting of the paper is effected down to a width of two inches and these very narrow reels are in demand in a variety of modern apparatus.

In addition to its line of white sulphite printing papers, cream laids and woves, white and tinted banks and bonds (Colorbright), the mill also produces tinted imitation art papers (Colotone) in white and eleven shades. This line provides a series of charming papers, eminently suitable for light and delicate printing effects. Similarly its white and tinted duplicator papers (Copyclear) are particularly adaptable for varied office stationery.

Since the introduction of lithographic printing, the mill also has followed closely the needs of the printer in this direction and has supplied the necessary adequate printing base. A further direction in which it has made considerable progress during recent years is in the production of (O.P.M.) offset printing papers.

Power Set-up

of Northern New York Mill

C. L. HIGGINS, Chief Engineer
Finch, Pruyn & Company, Inc.

As told to Francis A. Westbrook

FROM the standpoint of power and power transmission, the mill of Finch, Pruyn & Company, Inc., Glens Falls, New York, has some interesting and perhaps unusual features which are susceptible of wide application. The mill is located on the Hudson River and has a canal with normally large quantities of water at a head of about 40 ft. As a result, most of the electrical power is generated by the mill, except at times of low water, when a portion of it is purchased. In addition, some of the machinery is driven direct from water wheels.

Along one side of the grinder room and in alignment for direct connection to two grinders each are five water wheels. One of these wheels is 2900 hp., three are 2400 hp., and one is 3200 hp.

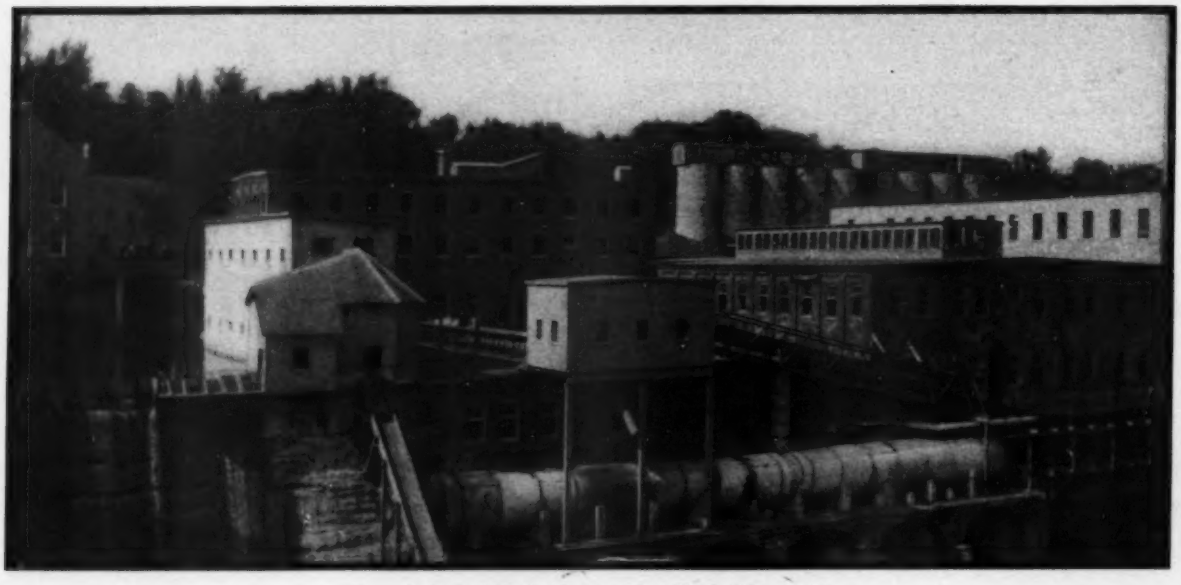
The 3200-hp. water wheel also drives an 800-kw. generator in addition to its two respective grinders. This generator is provided with a disconnect coupling which permits it to be taken off the line when the water is low. During night operation, or at other times when the electrical load is light for comparatively short periods, the generator is allowed to turn over without carrying any load. As the grinder room is a point of heavy power consumption, the saving from using water power in this way is obvious.

Another point where power consumption is large is at the paper machines, and here it is handled in an entirely different manner. Each of three machines is driven by a 500-hp. Corliss engine which exhausts at about 10 lb. One of the engines has continuous hemp rope drive. The driver of this engine is 14 ft.; the driven sheave, 5 ft.; and the distance between centers, 30 ft. The other two drives utilize 4-ft. leather belts; have about the same diameter pulleys as the sheaves of the rope drive; and also have the same distance between centers as the rope drive.

These drives deliver to long horizontal shafts which extend the full length of the paper machines, but which are positioned in the basement under them. The shafts provide flat belt drives to pumps in the basement as well as flat belt drives for various parts of the paper machines. Where variable speeds are required, cone pulleys have been installed. Adjacent to each paper machine, on the floor above, is a series of short countershafts which provide for right angle turns, for the wire drive, three presses, two sections of dryer and the calender. Some of the belts are of rubber fabric and others are of leather. Extra pulleys for making the right angled turns are supported between the floors on heavy channel irons.

The "shake" on the No. 1 machine, a machine which is used for the production of various grades of paper, is driven by a d-c. motor, which receives its energy from a motor-generator set installed for the purpose.

In addition to the individual drives for the larger machine units, there are numerous instances of group drives as well. For instance, stock thickeners are driven in two groups of six and eight respectively and, as space conditions are ample,



General view of Finch, Pruyn mill at Glens Falls, N. Y.

flat rubber belts are used. There is another group drive, the line shaft of which is driven by a 150-hp. motor through a 15-in. flat belt. Flat belt drives are taken off this line shaft to three stock pumps for the jordans and to two beaters, the beaters being located on the floor above and 14-in. belts passing through the floor from the line shaft to them. This shaft also is provided with a disconnecting coupling to a water wheel which may be used instead of the motor when water conditions are favorable.

Another beater, a unit wnich is not in constant operation, is driven by an individual 75-hp. motor through a 12-in. flat belt. In this case, the driving pulley is about 12 in. in diameter and that of the driven pulley about 72 in. As the space for this drive permits a distance of only 8 ft. between centers, a 30-in. diameter tightening pulley is utilized. The jordans are driven by individual 150-hp. motors through 14-in. flat rubber belts. Center distances for the jordan drives, however, are sufficient to obviate the need of idler or tightening pulleys.

The screens, also individually driven, have 40-hp. motors, 12-in. driving sheaves, 54-in. driven sheaves, and V-belts. The centers distance of each of these drives is 54 in. There are four V-belts for each drive.

Two applications of mechanical variable speed control include a small drive on a Trimbey mixing system and a larger drive on a Cox stoker in the boiler plant, the stokers for the other boilers being steam engine driven.

The preponderance of flat belt drives in this mill is due to very practical considerations resulting from variations in the speed of the generator which, as mentioned previously, is direct-connected to the same shaft of the 3200-hp. water wheel as two of the wood-pulp grinders. When a pocket of a grinder is pulled, a large part of the load is removed and the water wheel speeds up. This speed may increase the r.p.m. of the shaft as much as 7 to 10 per cent before a Meyer governor acts. This change in speed of the shaft speeds up the generator and consequently all the motors in the plant speed up. As so much of the motor driven equipment is heavy and resistant to sudden changes in speed, the use of flat belts permits a slight amount of slipping, which is all that is required to take care of these sudden changes of short duration.

There are some 170 motors in the mill. These motors range in size from ¼ to 150 hp. All of them are inspected daily by the oiler who reports any trouble which he is not able to remedy. Spare motors for replacement are kept on hand for out-of-service repairs. In addition, the belt man goes over all belts every night, and if he finds signs of the beginning of a loose end, or of failure from any other cause, it is fixed at once. A full supply of all kinds and sizes of belting in use is kept on hand.

In addition to the 800-kw. generator, there are two other generators, a 300-kw. and a 400-kw. unit, each of which is driven by a separate water wheel. When the water is too low to permit the full operation of the generators, such additional electrical power as is needed is purchased. Under these conditions, one of the generators at times is left on the line and is run condensing to correct the power factor.

Steam for the mill is generated by one Heine, cross-drum, 527-hp. boiler equipped with the Cox chain grate stoker previously mentioned and two Riley Badenhausen, 500-hp. boilers equipped with Harrington chain grate stokers. The boilers are operated at 140 lb. pressure. A small portion of the process steam is taken direct from these boilers and is reduced in pressure through reducing valves, but most of the process steam and all of the steam for winter heating of the plant comes from the exhaust from the three Corliss engines.

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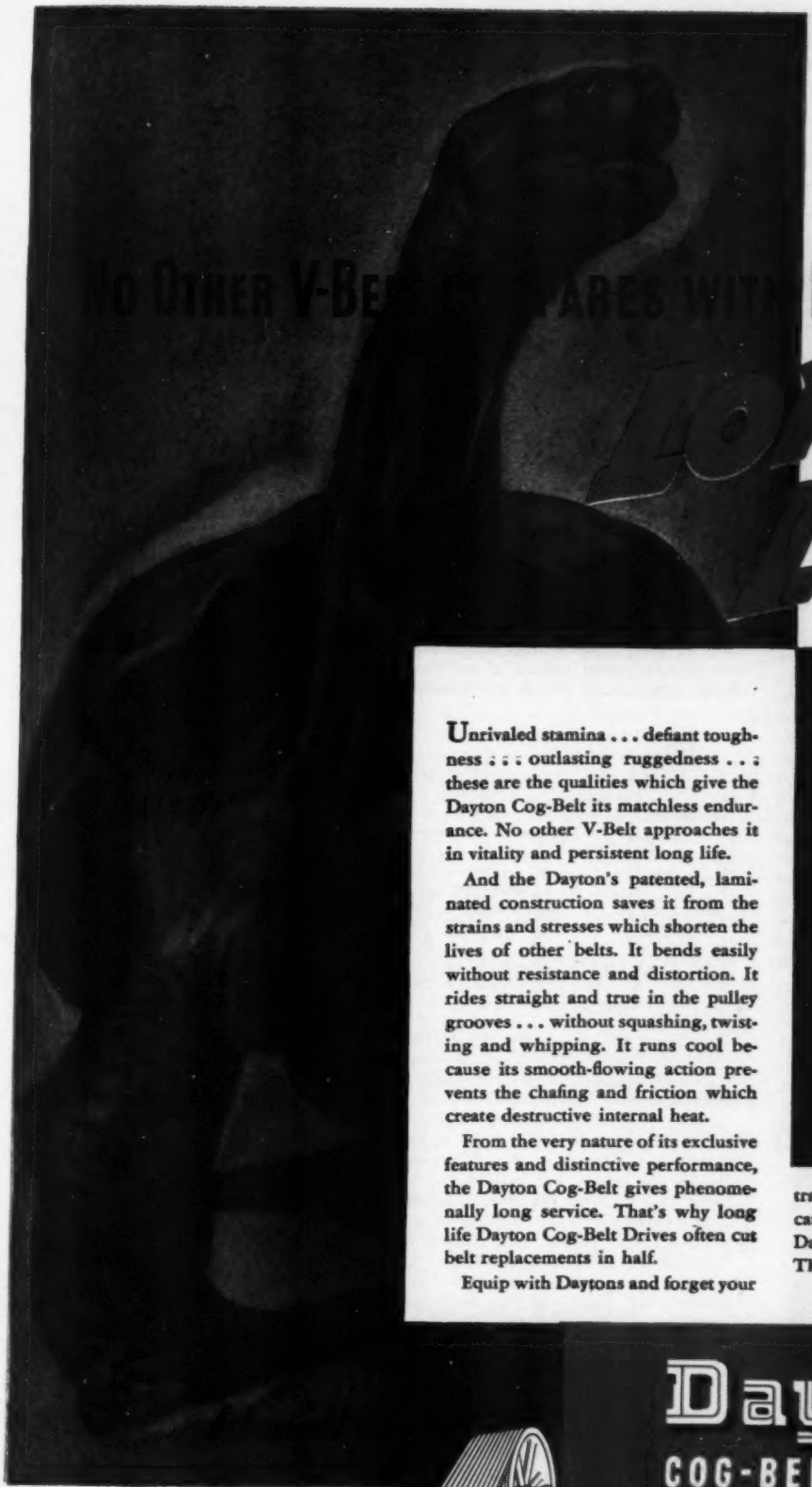
BUREAU TO FURTHER STUDY EFFECT OF LIGHTS ON PAPER

The paper section of the National Bureau of Standards has resumed one of its uncompleted projects dealing with the preservation of records—the effect of light on the stability of papers. In its previous work, the Bureau demonstrated, as has been done elsewhere, that ordinary sunlight is very destructive to papers of all kinds. However, it is known that by removing some of the component light rays by means of various colored glasses, it is rendered less harmful to paper and other materials. Amber colored glass is considered helpful and is used to some extent in libraries and museums. But more definite information is desired, and it is proposed to expose a variety of record papers to light filtered through glasses of different colors, and measure the relative deteriorative effects on the papers as indicated by decrease in strength and changes in chemical characteristics.



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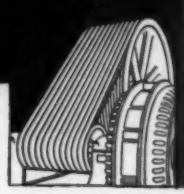
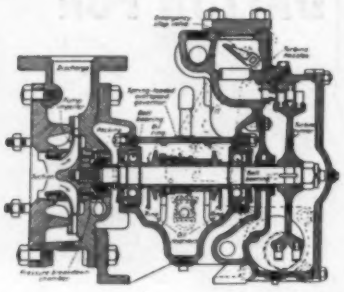


Dayton
COG-BELT DRIVES

NEW EQUIPMENT AND SUPPLIES

Centrifugal Boiler Feed Pump

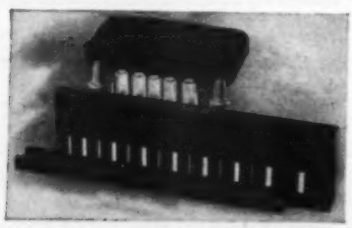
A high pressure single stage turbine driven centrifugal boiler feed pump of integral design has been announced by The J. S. Coffin, Jr., Company, Englewood, N. J. This pump, known as the Coffin centrifugal boiler feed pump, is built for pressures up to 500 lb. per sq. in. and for deliveries



from 70 g.p.m. to 350 g.p.m. The pump utilizes a single steel casting for the turbine and bearing casing; has a solid bronze water end; requires no packing between overhauls due to self-setting design; and packs only low pressure with very light packing contact. All of its wearing parts are renewable. The nominal operating speed for the unit is 7150 r.p.m. High speeds and small diameters, according to the manufacturer, result in very low steam consumption for the unit. The manufacturer also suggests the use of a number of these units, arranged in series on a single feed line and controlled by a regulator at each pump, for large installations, it being claimed that the cost of such an application is in line with a single large pump and that there are many operating advantages in the arrangement.

pH Slide Comparator

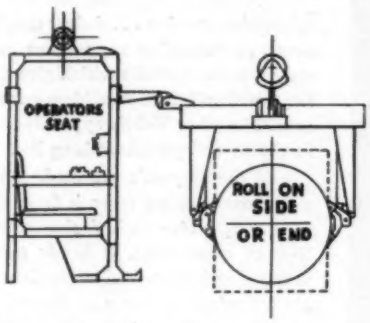
A new slide comparator for the colorimetric determination of pH, chlorine, and phosphates has been developed by W. A. Taylor & Co., 872 Linden Avenue, Baltimore, Md. This outfit consists of a slide and base, the slide containing 9 color stand-



ards alternating with ampoules of distilled water, the base containing 2 vials of indicator solution (each with a 0.5 cc. pipette), 5-5 cc. test tubes and a piece of etched glass in a special compartment. Both the slide and the base are of molded plastic. All pH, chlorine and phosphate values, as well as the indicator names, are engraved in white on the slide. Improved catches hold the top on the base and all metal parts are rustproof. The whole outfit, including the slide, is 10 in. long, 2⅛ in. wide and 4 in. high; and weighs only 1½ lb. It is neat in appearance, durable, and easy to handle. One base can be used with any number of color standard slides. A determination is made by filling three of the five test tubes with test sample, adding 0.5 cc. of indicator solution to middle one, placing slide on base and moving it back and forth until test sample matches one of the color standards. The pH, chlorine, or phosphate value is then read off directly from the values on the slide. All color standards are guaranteed by the manufacturer to maintain their accuracy for a period of 5 years.

Suspended Seat Hoist Carrier

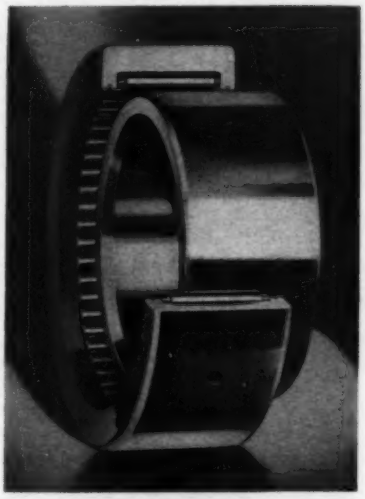
A suspended seat hoist carrier for an overhead tramrail system has been announced by the Cleveland Tramrail San Francisco Company, 82 Beale Street, San Francisco, Calif. This carrier is equipped with grab for handling rolls of paper either on side or on end or for the handling of bales of pulp, paper or rags; while separate hoisting cables support a well cushioned, safe seat and prevent it from being



disturbed if the load cables should break. With this design, the operator is always abreast of the load. When the grab goes down or up, the operator goes with it in the seat. One man, therefore, can handle the entire operation involved in moving material to and from storage. He not only operates the carrier, but attaches and unhooks the load from the grab. Likewise, he is always close to the load and can turn it or spot it as desired. All controls for operating the carrier are mounted on the seat. There also are automatic limit switches for controlling the lower and upper limits of travel of the load and seat.

Quill Bearing

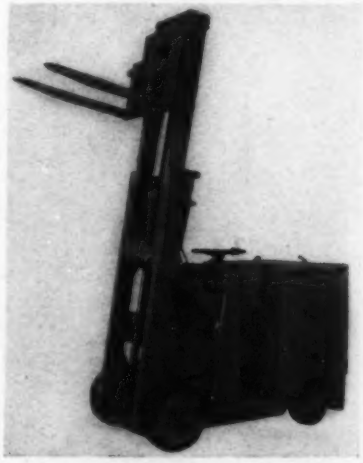
A new type, heavy-duty, needle roller bearing, known as the Standard Quill Bearing, has been announced by the Bantam Bearings Corporation, South Bend, Indiana. Among the outstanding features of this bearing, cited by the manufacturer, are: A one-piece, rigid, channel-shaped outer race in which a full complement of small diameter rollers is firmly held; a spring steel band employed to maintain rollers and outer race as a unit during assembly but not called upon to carry any load while operating; rigid rib surfaces of outer race accurately hardened and ground; rollers correctly proportioned to pitch diameter in-



volved and made with husky curvilinear trunnions; load capacity high; space required at minimum; and assembly easy. The bearing is available either with or without an inner race, and in a complete range of sizes for shafts from ¾ in. to 5 in.

Center Control Tilting Fork Truck

Yale & Towne Manufacturing Company, Philadelphia, Pa., has announced the development of a center control tilting fork truck which is designated as Yale Model K41. This truck, available in a capacity range



from 1500 lb. to 20,000 lb., has a minimum overall height of 83 in., a maximum height in raised position of 102¾ in., and an overall length of 83 in. The fork is elevated by two independent roller chains which are driven by spur gears. The upright channel frame is tilted back 10 deg. and forward 5

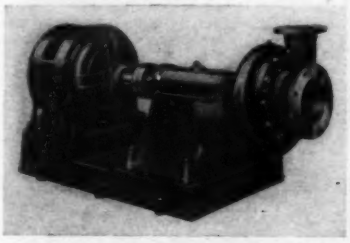
deg. by two racks which pass over driving pinions that also are driven by spur gears. These tilting racks hold the upright channel frame in any degree of tilt within the range of movement at the will of the operator. The main drive of the truck is a double reduction bevel and spur gear arrangement; while the battery compartment is capable of containing a battery with a maximum rating of 24 kwh.

Welding Electrode For Alloy Steel

The Harnischfeger Corporation, Milwaukee, Wisconsin, has announced a welding electrode for welding Man-Ten, Cor-Ten, High-Steel, Republic Double Strength, Yoloy, etc. This electrode designated as Smootharc "Har-Ten," is available in two types—Type A and Type B. Type A is used for flat, vertical and overhead positions. Type B is for flat work only. Both types are available in sizes from ⅛ in. to ¼ in. in diameter and are manufactured in 14 in. lengths.

Single Stage, Side Suction, Centrifugal Pump

Lawrence Pump & Engine Co., P. O. Box 70, Lawrence, Massachusetts, has announced a single stage, side suction, centrifugal pump for general industrial use. The pump, designated as Type "HBD" Vortex, is made in sizes ranging from 1½ in. to 18 in.



discharge, in capacities from 10 g.p.m. to 15,000 g.p.m., and for heads up to 300 ft. in the smaller sizes. The pump casing is of the solid volute type with removable suction head. Eccentric nozzle on suction head permits removal without disturbing discharge pipe or pump alignment. Impeller is of the enclosed type, cast in one piece; and may be of cast iron, bronze, or special alloy when specified. Supporting bracket and pump casing are separate parts with machined male-female fit between to insure perfect alignment. Close grained cast iron is standard for pump casing. Two heavy duty, double row ball bearings, lubricated by an oil reservoir, and entirely external from pump, support the pump shaft. The packing gland is of the two-piece, interlocking type and is of bronze.

Triple Seal for Bearings

A patented triple seal for protecting bearings against lubricant leakage, dust, dirt, and moisture has been announced by S K F Industries, Inc., Front St. and Erie Ave., Philadelphia, Pa. This seal consists of two split piston rings on each side of the housing and grooved on the outside diameter to form a labyrinth seal with the two end bores of the housing. Each ring has an inward tension that enables it to turn with the shaft. On either side of the housing, two rings are mounted on the shaft with the splits 180 deg. apart. The two inner rings serve as an internal flinger; while the outer rings keep dirt and other foreign substance

from entering the housing. The seal is made for the complete range of standard shaft sizes; and is designed for split housings which are machined to allow axial freedom of the bearing.

Platform Truck

All Steel Welded Truck Corporation, Rockford, Illinois, has announced the Clark E-Z Roll Platform Truck as an addition to its line of materials handling equipment. This truck, available in a wide range of standard sizes and in special sizes as well, has an electric welded steel frame, a deck of hard maple, and wheels of semi-steel, or Goodrich rubber tired, with Hyatt roller bearings and Zerk grease fittings. It also is equipped with double row ball bearing swivel casters.

Suction Roll Cleaning Unit

Hydro Silica Corporation, Gasport, New York has developed a device for the cleaning of suction press and suction couch rolls of paper machines. The device consists of a pump and gun arrangement by means of which water is delivered to the barrel of the gun, at 800 to 1000 lb. pressure; there mixed with sand, air or chemicals; and then the mixture discharged from the gun through a jet at the right pressure to perform its cleaning function. With this

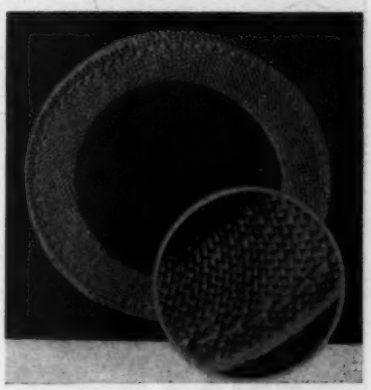
equipment, according to the manufacturer, the holes of a roll which has become clogged can be cleaned in a very short time without removing the roll from the machine and without removing the machine clothing. Suction press rolls, for example, are being cleaned in one hour's time with one man and the unit.

Resilient Non-Slip Flooring

The Ohio Rubber Company, Willoughby, Ohio, has announced a resilient, non-slip flooring material which is composed of aluminum-oxide abrasive aggregate securely bonded into the surface of resilient rubber. The material is available in either tile or sheet form and in various popular colors. It may be installed on new or old floors of wood, concrete, steel and other materials. The manufacturer claims that the new flooring, whether wet, dry or smeared with oil, provides exceptionally effective non-slip efficiency; and suggests that it is sound absorbent and comfortable to stand or walk upon.

Glass Fibre Gasket and Packing

Goetze Gasket & Packing Company, Inc., New Brunswick, N. J., has announced a woven glass fibre gasket and a glass fibre



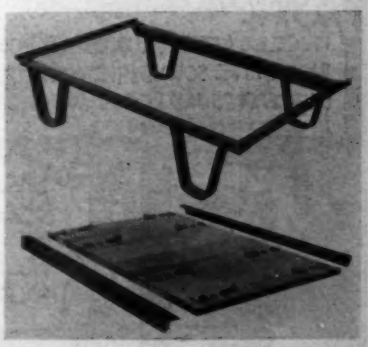
packing. The gasket is soft, pliable and resilient; and is resistant to all acids except hydrofluoric acid. The packing has been designed for use on centrifugal and reciprocating pumps, valve stems, etc.

Crepe Surface Conveyor Belt

A crepe finish conveyor belt has been developed by United States Rubber Products, Inc., 1790 Broadway, New York, N. Y. The crepe finish, applied to the carrying side of 28 oz. and 32 oz. duck, has a minimum thickness of $\frac{1}{16}$ in. This thickness may be increased as required. Additional back cover thickness also can be furnished. The belt is suggested by the manufacturer for conveying various types of packaged material on a greater degree of incline than is normally encountered in regular conveyor work.

Skid Platform Frame

A skid platform frame of metal construction, designed to permit the purchaser to put in a wood top to meet individual requirements, has been placed on the market



by The Yale & Towne Manufacturing Company, 4530 Tacony Street, Philadelphia, Pennsylvania. The frame is designated as Re Nu Top. It is furnished with clearances ranging 6½ to 12 inches.

PAPER SKETCHES

BANDBOXES MADE OF PASTEBOARD AND COVERED WITH GAILY FLOWERED WALL PAPER WERE IMPORTANT PARTS OF MILADY'S LUGGAGE DURING THE LATE 17TH AND EARLY 18TH CENTURIES.

MANY PRICELESS AZTEC MANUSCRIPTS PAINTED ON NATIVE MEXICAN MAGUEY PAPER WERE SOLD BY THE CONQUERING SPANIARDS TO APOTHECARIES, SHOPKEEPERS AND ROCKET-MAKERS, TO BE USED AS WRAPPING PAPER.

JOHN AMES.. A FOREMOST AMERICAN PAPERMAKER AND PAPER EQUIPMENT INVENTOR OF THE EARLY 1800's. TOGETHER WITH HIS BROTHER, DAVID, JOHN AMES IS SAID TO HAVE MANUFACTURED HALF OF THE ENTIRE U.S. PAPER OUTPUT IN THE YEAR 1837.

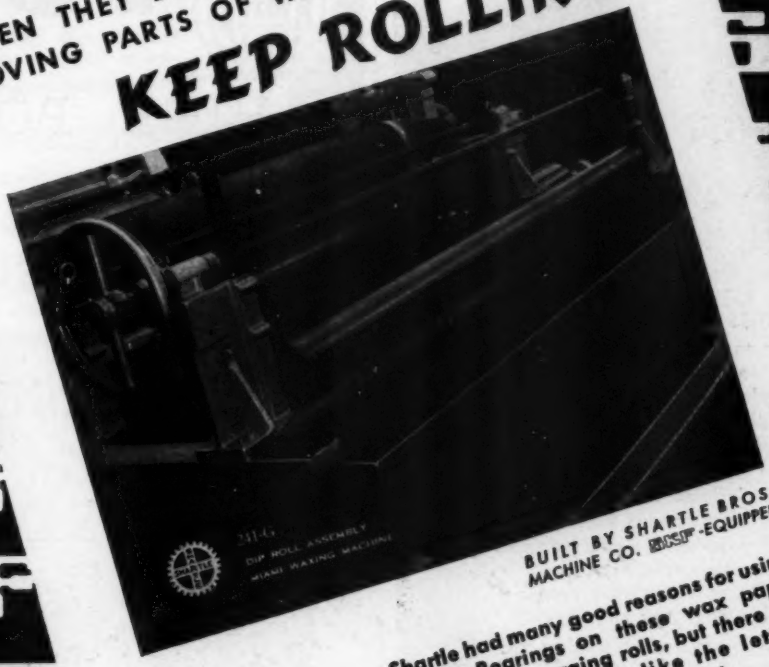
50,000 TONS 1925

950,000 TONS 1937

ACCORDING TO A PUBLISHED REPORT, WORLD CONSUMPTION OF PULP FOR RAYON AND STAPLE FIBRE MANUFACTURE INCREASED FROM 50,000 TONS IN 1925 TO AN ESTIMATED 950,000 TONS IN 1937

WHEN THEY DEPEND ON SKF BEARINGS, MOVING PARTS OF WAX PAPER MACHINES

KEEP ROLLING



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First, alignment that accommodates for minor deflection takes place within the bearing. In other words, the bearing is *self-aligning*. Second, an easy-to-mount adapter sleeve eliminates the extra machining required for a light press fit.

Then, too, SKF's are permanently adjusted, self-contained units that require no other lubrication than the wax bath itself. If you want the bearing that's preferred in the Paper Industry, select SKF.

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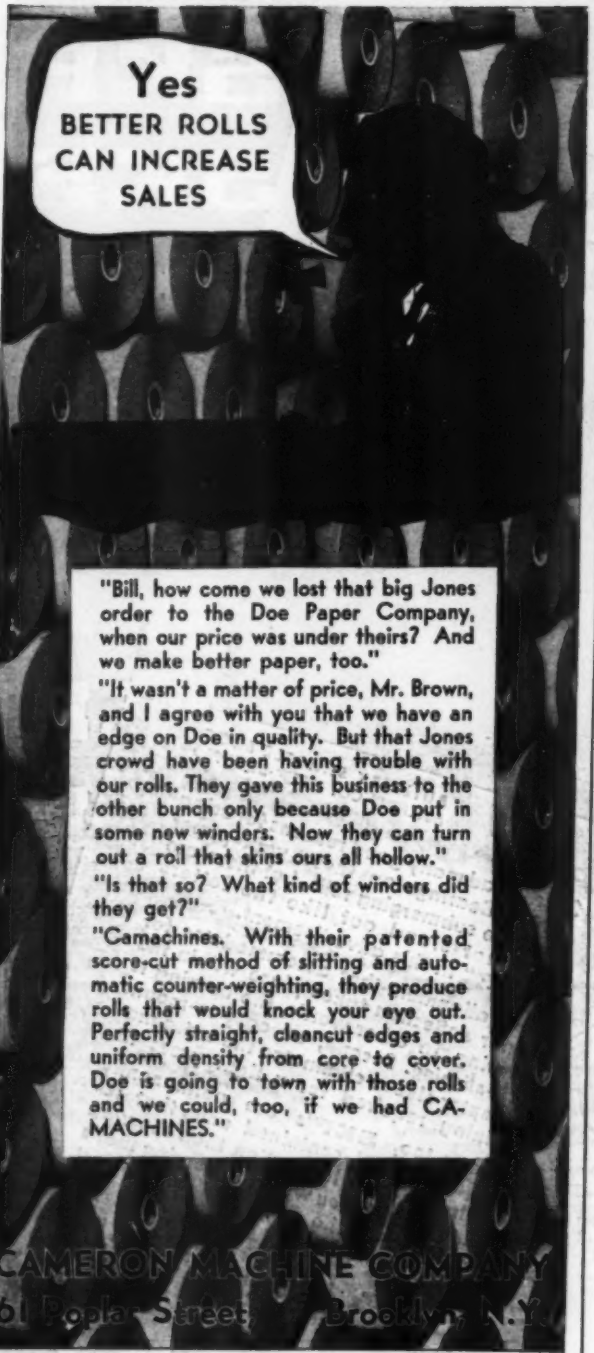
SKF makes more types and sizes of ball and roller bearings than any other manufacturer in the world.



"Bill, how come we lost that big Jones order to the Doe Paper Company, when our price was under theirs? And we make better paper, too."

"It wasn't a matter of price, Mr. Brown, and I agree with you that we have an edge on Doe in quality. But that Jones crowd have been having trouble with our rolls. They gave this business to the other bunch only because Doe put in some new winders. Now they can turn out a roll that skins ours all hollow."

"Is that so? What kind of winders did they get?"

"Camachines. With their patented score-cut method of slitting and automatic counter-weighting, they produce rolls that would knock your eye out. Perfectly straight, cleancut edges and uniform density from core to cover. Doe is going to town with those rolls and we could, too, if we had CAMACHINES."

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EXCELSIOR Knox Woolen Co. Camden, Me. FELTS & JACKETS

HIGH POROSITY

. . . as a characteristic of a paper maker's felt will, not only add to the life of felt, but saves time lost on the machine due to excessive shut downs for washing. Specify

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and minimize this trouble. Made by the Knox Woolen Co., of Camden, Maine, since 1864.

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This New Murray Flat Screen is equipped with a special drive developed to meet exacting and heavy duty requirements with high speed. A modern equipment for the mill that must improve quality and cut operation costs to meet all competition. Quiet in operation. Efficient, these screens will do a better job of cleaning your pulp. No vibration, no pounding, no clatter. Highest efficiency, with lowest maintenance and lowest power costs. This drive can also be installed on your present screens. Write for prices on screens you require to modernize your mill. Remember, we make all sizes and types of construction to fit every requirement.

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THE Soundview Pulp Company is known for the fine qualities of its sulphite pulp by paper mills throughout the United States and in many foreign countries. This mill is considered one of the most modern—in design, construction, equipment, and methods. Operating the largest mill in the world, this company reached a production in excess of 500 tons per day shortly after the completion of a recent expansion program.

Soundview uses Pennsylvania Salt's Liquid Chlorine and Caustic Soda, and since 1935 has used the Pennsylvania Salt Chlorine Dispersion Method* in one of its units.

* U. S. Patent 1,971,241, dated August 21, 1934. Also fully protected in twelve foreign countries.

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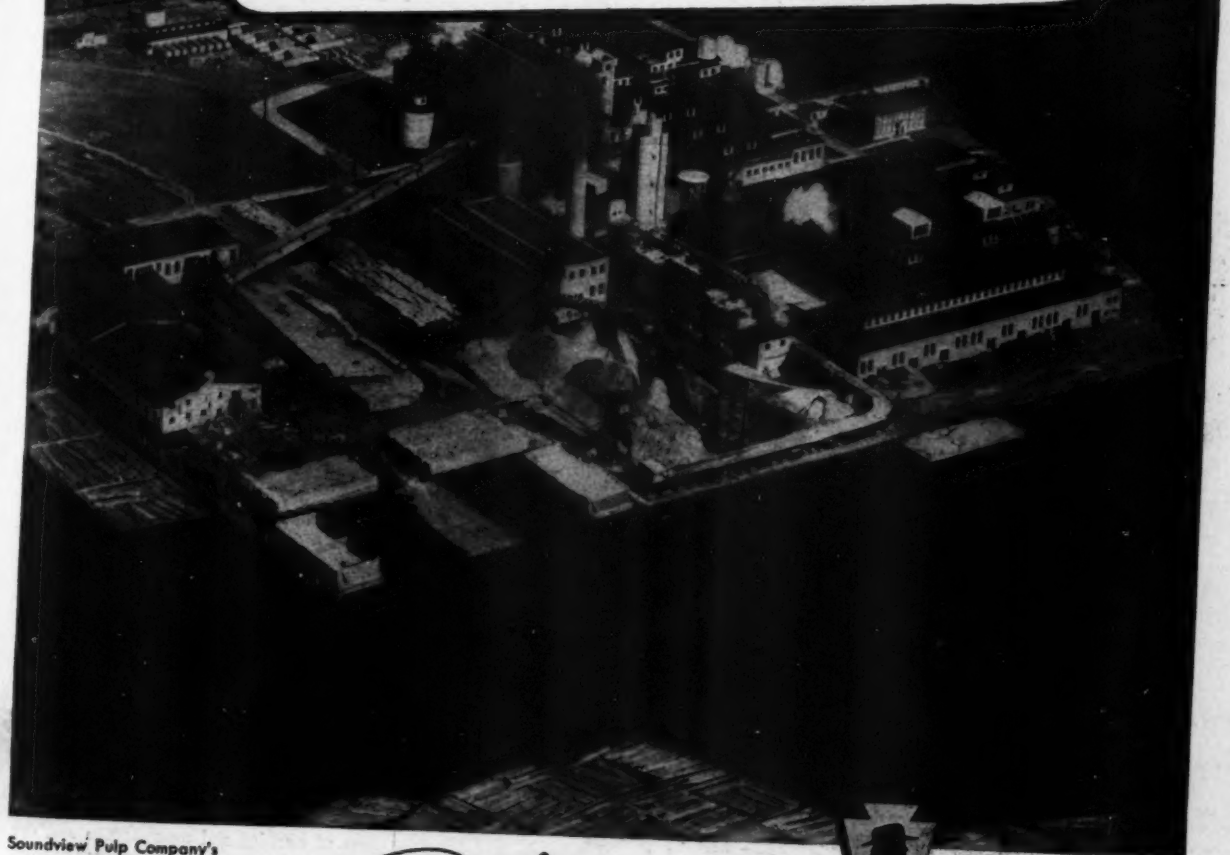
CHLORINE DISPERSION METHOD
DEVELOPED BY PENNSYLVANIA SALT MANUFACTURING CO.



Soundview Pulp Company's mill at Everett, Washington

PENNSYLVANIA SALT
Chemicals

TECHNICAL DEVELOPMENTS

The following abstracts are of the latest developments found in the foreign press.

Softening of Cellulose Films Treated with Aluminum Soaps

Cellulose films were treated with solutions of aluminum palmitate, stearate, oleate, and naphthenate, so as to render them water resistant without influencing their flexibility, (by subsequently permitting hydrophobic softeners to penetrate into the innermost structure of the cellulose) through the agency of the hydrocarbon radicals of the soaps. The influence of the adsorption of such soaps on the hygroscopicity and permeability towards water vapor were studied. Hygroscopicity decreases gradually with increasing concentration (or adsorption) of the A1 soap solutions. At a specific concentration of the solution, at which the potential on the cellulose changes, the hygroscopicity is at a minimum. As the concentration increases beyond this point, and the positive charge on the cellulose increases, the hygroscopicity again increases. The theory of Kanamaru (that the Zeta-potential of cellulose in water suspension is a sensitive measure of its hydrophylic properties) is thus confirmed.

Water vapor permeability—soap concentration curves resemble those of hydroscopicity-soap concentration graphs. The maximum resistance to diffusion lies in the region of the soap concentration which causes the minimum hygroscopicity. This is also the region at which the film has the greatest resistance to tear; i.e., at the point of changing potential and the change in stretch, in films treated with aluminum soaps in varying concentration shows a curve very similar to that for tear, with maxima at the same region. The cellulose samples, pretreated with aluminum soaps, were then treated with such softening agents as the higher alcohols, hydrocarbons, and oils. This insured flexibility with retention of waterproofing properties. Experiments confirmed the hypothesis that adsorbed soaps facilitated the entering of hydrophobic softening substance into the inner cellular structure. Stretch of A1 soap treated celluloses was markedly increased by the subsequent addition of softeners. However, at very high concentration of A1 soaps, the stretching properties decrease again. And this is also true for mechanical strength curves. Evidently there is an analogy here between such, and those of films of cellulose treated only with the A1 soaps. The general shapes of the sorption-concentration curves of samples treated solely with A1 soaps is not appreciably altered by subsequent treatment with softeners. Maximum resistance to diffusion and the minimum hygroscopicity are at approximately the same point. The resistance to moisture, and to vapor diffusion of sheets treated under optimum conditions, compare very favorably with those of cellulose ester and cellulose ether films, and are far in excess of those of the commercial water-resistant cellophane. Kisou Kanamaru, Akira Shiratori and Takayoshi Nakamura. J. Soc. Chem. Ind. (Japan) 41, 132B-1 52B (1938) through Papier-Fabr. 36 (Abstracts) 161-2 (1938).

How To Operate Paper Mills More Profitably
CLEAN THE MODERN WAY FOR GREATER ECONOMY AND PROFIT WITH MAGNUS PAPER MILL MATERIALS
Cut your cleaning costs and increase your profit margins with the 6 modern materials for paper mills . . . for felt, filter and suction roll cleaning, slime removal, "frictions" and machinery cleaning and obtaining better beater results. Magnus SLIME REMOVER, Magnus FELTEX, Magnus BEATEX, Magnus SUCTION PRESS ROLL CLEANER, Magnus No. 58 and MAGNUSOL are making more money for leading paper mill operators everywhere. Put them to work for you!
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Pressure Elasticity of Newsprint

Using a Zeiss paper micrometer, the thickness (a) of a given sheet is measured. Then, under a known calendering pressure, the thickness (b) is determined. Finally, (c) is the thickness of the sheet determined after calendering. From these may be calculated the percentage compressibility: [100(a-b)/a]; and the percentage expansion elasticity [100(c-b)/a]; and the percentage plasticity [100(a-c)/a]. The author reports data for 36 types of paper. When the calender pressure was 10 kg. per linear cm., the percentage compressibility is approximately proportional to the percentage expansion elasticity. The smoothness and volume weight are at times proportional to the percentage compressibility. Evidently, there is no proportionality between compressibility and basis weight, thickness of sheet, cellulose content, or ash content. The elasticity of sulphite pulp seems to be correlated with the degree of beating. Olli Ant-Wuorinen. Finnish Paper Timber J. (1938), No. 15a, 73-84, No. 15, 569-72 through C. A. 32, 8142 (1938).

Degree of Beating and Concentration of Electrolytes

There is no general agreement between various investigators regarding the best pH at which to beat pulp, a fact which may be ascribed to varying experimental conditions. The swelling of cellulose in an electrolyte solution of different concentrations is dependent on the electrolyte, and shows a typical change for each electrolyte with varying concentrations. There is a parallelism between curves obtained from the degree of swelling and concentration and the *zeta*-potential concentration curves. Beating involves mechanical and also colloidal change in the fiber, and the latter appears to be the more important. Experiments were performed with a view towards determining the interdependence of the degree of beating, the kind of concentration of the electrolyte and the *zeta*-potential of the cellulose in the electrolyte. Various concentra-

FIG. 102
BRONZE GLOBE
VALVE.

FIG. 375
BRONZE GATE
VALVE.

FIG. 150
BRONZE GLOBE
VALVE.

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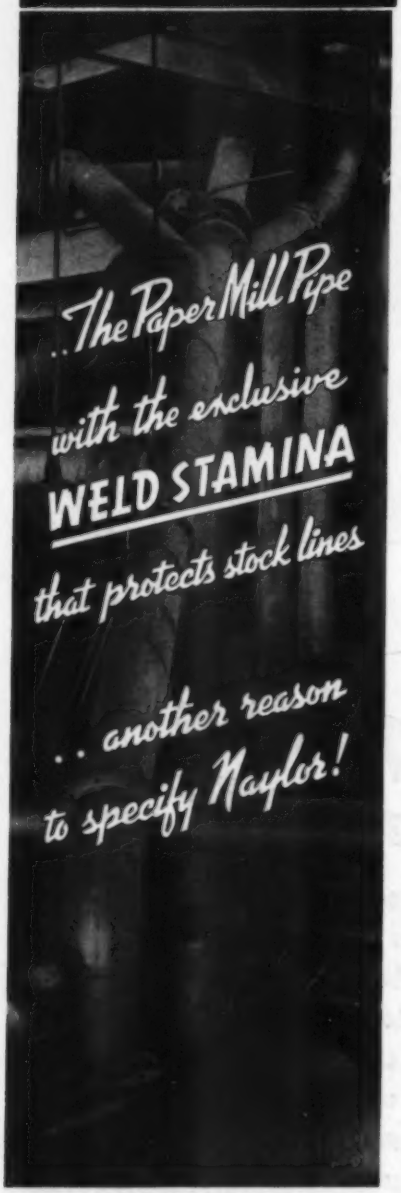

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tions of NaOH, HCl, KCl, and papermakers alum were used in an experimental beater with specially prepared pulp (of high alpha-cellulose content). The degree of beating changes at the beginning of the beating period with increasing concentration of the electrolyte. Each electrolyte gives rise to its own typical curve. These curves are similar to those found earlier for degree of hydration concentration. The degree of beating or swelling concentration curve manifests a parallelism to the *zeta*-potential concentration curve. The conclusion is that the hydration of cellulose in aqueous solution is a determinative factor in the degree of beating. A degree of beating pH curve runs almost parallel to a (previously obtained) degree of swelling pH curve, and also with the *zeta*-potential pH curve, regardless of whether alkali or acid was used, or whether the author used buffer mixtures with different pH values. Evidently H ion and OH ion play the most decisive role in the hydration capacity of the cellulose, and the hydration of the pulp is the primary factor in beating. K. Kanamaru. J. Soc. Chem. Ind. Japan 41, (Supplement) 182-91 (1938), Kolloid Z. 84, 222-32 (1938); C. A. 32, 7720-1 (1938).

Control of Straw Pulp Cooks

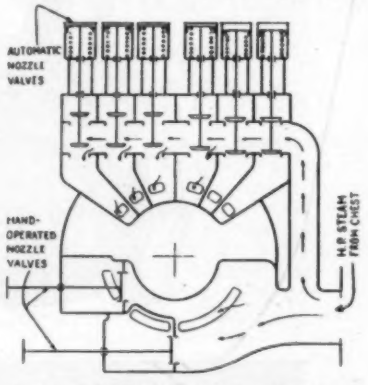
The Russian technique depends on determining the lignin content in one liter of black liquor. The ratio of lignin in the cooking liquor to the lignin in the original straw is the so-called percentage of pulp cooking. This control analysis is made every 30 minutes. When the lignin content in the liquor actually decreases (due to decomposition), the digestion is over. I. S. Obosny. Bumazhnaya Prom (Paper Ind. of U. S. S. R.) 15, 58-62 (1937) through Zellstoff U Papier, 17, 355 (1937) and Bull. Inst. Paper Ind. 8, 327 (1938).

Electrical Conductivity Control of Alkali Losses

Control of alkali losses in waste waters of sulphate mills, by conductivity determinations is recommended whenever feasible. With the exception of gravimetric methods, it appears to be the most accurate. However, certain conditions influence this accuracy, which depends on the concentration and composition of the liquor and on the quality of the water. The conductivity of this water and its reaction with the liquor is of importance. The application of the Kohlrausch formula on conductivity determination is discussed. Temperature has a very marked influence, a change of 1 degree causing a 2 per cent change. Graphs are given for equivalent conductivities of solutions at 18 degrees at varying concentrations, in which sodium acetate has the lowest value and the other salts or alkalies follow in *ascending* order: $NaHCO_3$, Na_2CO_3, Na_2SO_4, NaCl, NaSH, $Ca(OH)_2$, and NaOH. Tabulated data are also given for the cell constants with solutions of NaCl, Na_2SO_4 and NaOH in ordinary water containing impurities, and itself having a very appreciable conductivity. It was found that marked variations in conductivity resulted from water standing in pipes, depending on the season. The equivalent conductivities of Na_2O in white liquor, black liquor and "sulphate soap" in ordinary water were also determined. The graphs for the apparent equivalent conductivities shows a definite maximum for white liquor, which is approximately twice that for black liquor. Sulphate soap gives a low flat curve. The work of other recent workers is discussed. E. Venemark Svensk Papperstidn. 41, 406-11 (1938), through C. A. 32, 9487 (1938).

Turbines Applied to Paper Mill Drives

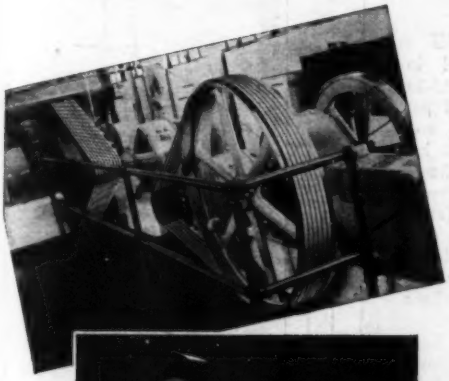
Except for small mills, the author indicates that the installation of back-pressure or of pass-out turbines results in a reduction of running costs. (In the pass-out turbine, a certain amount of steam, after having performed useful work in the initial stage, is extracted for process work in the plant. This type is fully descriebd and the energy losses are only about 2 per cent of the heat in the steam inlet.) In esparto pulp mills, there may be a demand for steam at two pressures (for processing), one for cooking the esparto grass (at about 80 lb./sq. in. gage) and another for heating the drying cylinders (at 25-30 lb./sq. in. gage). Frequently, therefore, it pays to install a turbine passing out at 2 points, although if the demand at the higher pressure is rather small it may be best to utilize steam directly from the boiler so as to avoid complications in turbine design. The initial steam pressures and temperatures are discussed in the light of conditions in the mill. Three types of turbines are described: (a) impulse type; (b) reaction type; (c) a combination of (a) and (b). For paper mills, (a) has an advantage over (b), excepting where large, continuous steam flows are required. The following points are adequately discussed: high pressure end, and low pressure end of turbine; automatic valve arrangements; questions of efficiency (where conditions are variable); nozzle and blade design; critical speed of turbine; control of speed and pass-out pressure (through a governor



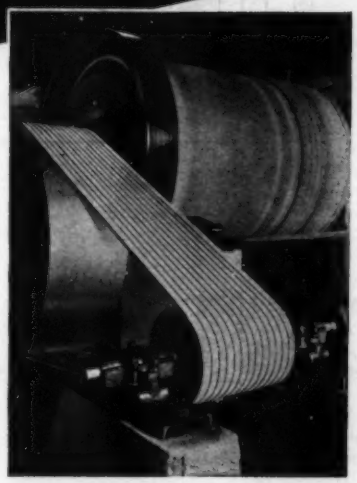
of the lead-off type and pass-out gear). An essential factor is to prevent water vapor from getting to the bearings, and elimination of water from the lubricating oil. The condensing plant is also briefly discussed. The illustration shows valve arrangements, in which there are two hand valves covering two banks of nozzles, and 6 (or 8) automatic nozzle valves. The

Make this Test WITH ANY V-Belt

You'll See AT ONCE The VALUE of the Concave Side



Bend *any* V-Belt and *feel* it change shape. The top, under tension, *narrows*. The bottom widens. The sides of the belt bulge out. The result is a shape that does not fit the sheave groove—as shown in Figure 1, below.



Now, bend a V-Belt built with the patented *Concave* side. You get the *same* shape change but *now* the new shape exactly fits the sheave groove—as shown in Figure 2. There is no side-bulge. Results? (1) *Uniform* side-wall wear; *longer* life! (2) Full side-wall grip on the pulley. Carries heavier loads without slippage; saves belts and also saves *power!*

The Gates Vulco Rope is the only V-Belt built with the patented concave side.

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hand valves control the most common conditions, and the automatic valves control final adjustments. Generally such a machine presents the most satisfactory arrangement. An intelligent and interesting discussion by various paper mill engineers follows the body of the paper. G. A. Neild The Paper-Maker and British Paper Trade J. 96 (T. S.), 153-160 (1938).

New Source of Infection in Pulp

The case of a sheet drum (made of wood) at the end of a wet machine is cited. This drum was in contact with the pulp for only a short time, but infected this passing pulp continuously, causing discoloration. The latter only developed when the two drying cylinders were preheated. Otherwise no mold was formed. This may be due to other mold-destroying microorganisms which were themselves killed by the heat. The use of wood in such equipment is therefore disparaged. Bengt Englund. Finnish Paper Timber J. 20, No. 15A, 105-6, 108-112 (1938), through Bull. Inst. P. Chem. 9, 65 (1938).

Water Consumption in Pulp Mills and Bleaching

A recent questionnaire circulated in Austria showed that approximately 18-20 cubic meters of water were required per 100 kg. air dried, unbleached pulp, and 50-55 cubic meters of water per 100 kg. bleached pulp. The requirements are shown to be contingent on the type of screens used and the re-utilization of water (especially from deckers, etc.). *Fresh* water consumption per 100 kg. bone dry pulp in a modern mill, where water from the thickeners is used over again, is about 7.5-10 cubic meters.

In the case of bleached pulp, the fresh water consumption depends on the stock density and the type of installation, (thickeners and washing equipment) etc. The author cites instances where the amount of fresh water requirements were 16 to 24 cubic meters per 100 kg. pulp. The original article is illustrated by schematic diagrams indicating the amount of water consumed at each stage of the operations. Rudolf Mehlo. Papier-Fabr. 36 (Tech.-Wiss. Tl.). 441-3 (1938).

Various Studies in Grinding

Three papers present the further work of the researches at Darmstadt. The first article deals with the influence of the moisture content of white spruce on the production of mechanical pulp. When a 32 per cent moisture content was reached, the wood seemed to present optimum conditions for readily dewatered stock, with larger mean fiber length, better felting qualities, and strength of sheet, without perceptibly increasing power requirements. However, this was wood whose 13.5 per cent moisture content had been artificially increased to various percentages (25.7, 29.6, 32.2, and 41.3). The effect of "natural" moisture content on grinding still remains to be studied. The relationship between the number of hours in moistening (Wässerungsdauer) and per cent moisture (Holzfeuchtigkeit) in per cent is shown in Figure 1. The effects of varying the per cent moisture in the wood on bursting strength (Berstdruck), tear length (Reisslange), and through tearing in cm.g. per cm. (Durchreissarbeit) of sheets made from spruce pulps are shown in Figure 2.

The second paper deals with a comparative study of pulp prepared from a sound pine bolt, and one produced from a pine in which blue stain had progressed very markedly. The only property in which blue stained, pulp proved inferior was in color (due to the bluish-gray tinge). In the individual sample studied, the

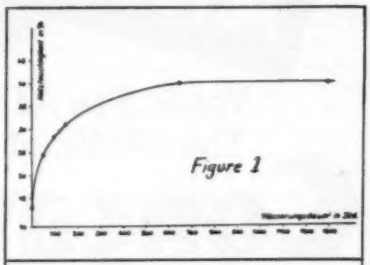

Figure 1

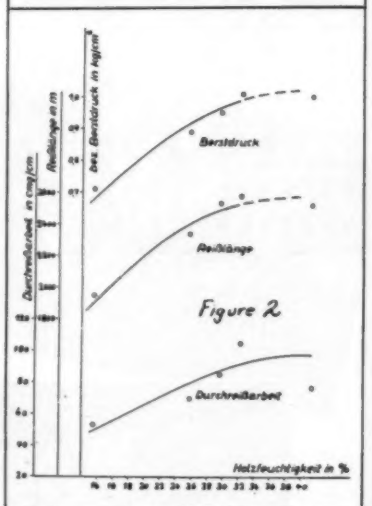

Figure 2

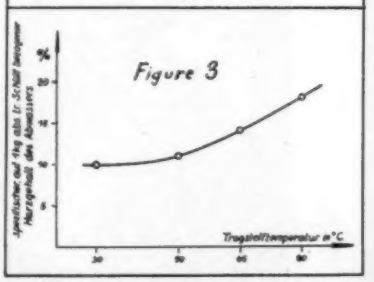

Figure 3

strength of the sheet of blue stained pulp was actually superior to that of sound wood, which was probably fortuitous. The final paper deals with the effect of grinding temperatures on the resin content of waste waters, in the case of white pine. This is shown in Figure 3, where the resin content of the drainage water (based on the suspension) is plotted against temperatures in the grinder pits. The higher this temperature, the less of the resin remains in the pulp. W. Brecht, H. Schröter, and R. Süttinger. Papier-Fbr. 36 (Tech.-Wiss. Tl.) 421-8 (1938).

Appleton Felts .. DESIGNED TO MEET YOUR MILL REQUIREMENTS

And Appleton Felts make good paper, too —always in step with modern advancements in paper making . . . .

APPLETON WOOLEN MILLS, APPLETON, WIS.

ASSOCIATIONS

FEBRUARY 19-26 IS PAPER WEEK

The Waldorf-Astoria's the place and New York City's the scene of the 62nd Annual Convention of the American Paper and Pulp Association which will be held during the week beginning February 19, 1939.

During Paper Week three other organizations of the paper industry will also hold annual meetings at the Waldorf-Astoria. These include the 35th Annual Convention of the National Paper Trade Association, the 23rd Annual Convention of the Technical Association of the Pulp and Paper Industry and the 20th Annual Luncheon and Meeting of the Salesmen's Association of the Paper Industry.

◆

PAPERBOARD ASS'N RE-ELECTS OFFICERS

Because of the interest manifested by paperboard manufacturers, the National Paperboard Association carried its annual convention sessions into two days of meetings. The convention was held at the Waldorf-Astoria, New York, November 16 and 17.

Following the policy of holding efficient officers in their positions as long as possible, the Association re-elected all of its officers as follows: President, Henry D. Schmidt, Schmidt & Ault Paper Company, York, Pa.; vice-president, S. M. Phelan, West Virginia Pulp & Paper Company, New York, and secretary-treasurer, Harry S. Adler, Chicago. Frederick G. Becker was reappointed executive manager and D. A. Sealey and Grafton Whiting were retained respectively as secretary of the Eastern Division and statistician.

Directors elected to represent the various groups were as follows:

Container Board

Eastern Division—Victor Donaldson, Robert Gair Company; Alan G. Goldsmith, Mead Corporation, and D. F. Lawless, Lawless Brothers Paper Mills.

Western Division—Marcus B. Hall, American Box Board Company; Walter P. Paepcke, Container Corporation, and Hugh Strange, John Strange Paper Company.

Southern Division—R. J. Cullen, Southern Kraft Company; H. W. Ellerson, Albermarle-Chesapeake Company; D. C. Everest, Ontonagon Fibre Company; F. E. Hummel, Hummel-Ross Fibre Company; S. M. Phelan, West Virginia Pulp & Paper Company, and C. W. Gaylord, Gaylord Container Corporation.

Corrugating Material

C. D. Altick, Terre Haute Paper Company; H. T. Cherry, Central Fibre Products Company, and Sidney Frohman, Hinde & Dauch Paper Company.

Pacific Coast

John W. Kieckhefer, Kieckhefer Container Company; G. Otto, Alton Box Board Company, and D. H. Patterson, Jr., Fibreboard Products, Inc.

Lightweight Chip Board and Bogus

D. H. Greene, Prairie State Paper Mills; C. R. Walker, Fox Paper Company, and H. D. Schmidt, Schmidt & Ault Paper Company.

Directors at Large

W. J. Alford, Jr., Continental Paper Company; W. G. Latham, Fort Prange Paper Company; C. E. Nelson, Mac Sim Bar Paper Company, and J. C. Ryan, Ball Brothers Company.

Discussions and reports indicated that the paperboard manufacturers expect materially better business in 1939 than has been experienced during the present year. This expectation is based on the improvement in conditions which is already becoming manifest.

During the course of the Annual Meeting of the National Paperboard Association, held in New York City, November 16 and 17, a beautiful color picture entitled "Perry's Victory on Lake Erie," was presented to Mr. Sidney Frohman, president of The Hinde & Dauch Paper Company, and the first president of the National Paperboard Association. Mr. Henry D. Schmidt, the president of the Association, made the presentation in behalf of the Board of Directors of the Association. The picture was duly unveiled by Mr. Alan G. Goldsmith, who had made the selection for the Board. It is done in colors and is a splendid piece of work, depicting that famous naval engagement on Lake Erie.

◆

▶▶▶ NEW ENGLAND'S CHAPTER of the Paper and Twine Club met at Boston's Chamber of Commerce, November 15. Lennox Ransom, of the Union Bag and Paper Corporation, presided at the successful affair which was highlighted by such speakers as Frank P. Vaughn, the national president, who spoke on paper selling; Secretary John Richey, who described the public relations program, and E. R. Lyman of the Missisiquoi Pulp and Paper Company who spoke briefly.

◆

▶▶▶ THE RESEARCH BUREAU of the International Association of Printing House Craftsmen, authorized by the Craftsmen's Research Commission, is now organized and ready to serve individual members, as well as collective membership, in numerous research activities. This new bureau is prepared to reply to individual inquiries relating to published information concerning developments in the graphic arts industries regarding materials, equipment, processes and technique.

◆

BOSTON PAPER ASS'N HOLDS ANNUAL MEET

The Boston Paper Trade Association's annual fall meeting was held at the Algonquin Club, Boston, on November 16 with Vice-President R. M. Stone presiding. First Vice-President John L. Hobson was unable to be present due to the fact that he is recovering from a recent operation.

New members elected at the meeting were Henry Curtis, of Curtis 1000, Inc., Hartford, Conn.; Russell S. Madden, American Writing Paper Corporation; F. H. Blackman, D. F. Munroe Company, Boston; Sheldon Collins; Ralph Beckwith, and John C. Hurd. At the meeting eulogies were delivered to the memory of the late W. J. Raybold of the Rising Paper Company whose death occurred last spring.

The dinner and brief business meeting was followed by an illustrated talk on arctic exploration by Donald MacMillan, New England arctic explorer.

◆

▶▶▶ NINE MONTHS WITHOUT AN ACCIDENT is the record of two mills in the "Safest Mill in Canada" contest sponsored by the *Pulp and Paper Magazine of Canada*. Anglo-Canadian Pulp and Paper Mills stays at the head of Class A and the Trenton Division of Hinde & Dauch Paper Company of Canada still leads Class B.

6 inch
Fig. 1430
I. B. B. M.

LUNKENHEIMER
Fig. 1430
IRON BODY
GATE VALVE

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Available in bronze mounted and all-iron; inside and outside screw and quick operating; for all service requirements.

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ALLIED

COURT SUSTAINS VALIDITY OF STONITE PATENT

In an action for infringement of the patent for Stonite press rolls in the case of Stowe-Woodward, Inc., vs. Cincinnati Rubber Manufacturing Company before the U. S. District Court of Ohio, Western Division, the court has just sustained the validity of the patent and granted a permanent injunction forbidding further infringement.

The Stonite patent covers the manufacture of rolls from rubber and granulated stone composite and the rolls are generally used as top press or smoothing rolls.

◆

HERCULES POWDER INTRODUCES NEW TYPE OF ROSIN

The Hercules Powder Company, Wilmington, Del., announced the commercial production of hydrogenated rosin at the Paint Industries Show held in Atlantic City recently. The new product, called "Staybelite," retains the advantages of rosin but virtually eliminates its tendency to oxidize and become brittle and yellow with age. "Staybelite" is much lighter in color than the lightest rosin now available and this color is retained on exposure to light. Hydrogenated rosin, it is claimed, will broaden the use of rosin in paints, paper, varnishes, lacquers, adhesives and rubbers. It can be used in other processes where rosin has been indicated but could not be used previously because of its tendency to oxidize and deteriorate.

◆

NEW CHART SHOWS COLOR RANGE OF pH TEST PAPERS

A new chart printed in fourteen colors shows how the Hydrion wide-range pH test paper has been extended to include a color change for each pH unit throughout the range from pH 1 to pH 14. The chart shows how fourteen buffer solutions, one for each pH unit, are used to bring out on the test paper the characteristic color for any pH unit. These color charts, issued by R. P. Cargille, 118 Liberty Street, New York City, will be sent without charge.

◆

BETZ LECTURES GIVEN AGAIN

A series of lectures on the subject of "The Chemistry in Water," which were inaugurated by W. H. & L. D. Betz four years ago and which aroused much interest in New York, Chicago, Baltimore and other areas, are now being given in the Buffalo and Cleveland area. The Buffalo lecture began November 14 at the Hotel Statler while the Cleveland series began November 15 in the Hotel Statler.

The series, comprised of five lectures, deals intimately with the chemistry of water, methods of purification and analysis. The subject itself, which is one of a technical nature, has been reduced to understandable terms for the average layman without detracting from the advanced technical ideas which now mark the science of hydrochemical engineering. In addition to instructions in modern methods of analyses and their interpretation, the lectures cover the technique of solving problems in boiler water correction, industrial water supplies, municipal water, waste, sewage disposal and kindred subjects. W. H. and L. D. Betz, chemical engineers and consultants, Philadelphia, have announced that much more data has been secured since the lectures were last given and will be incorporated into the new series.

◆

AS THIS ISSUE goes to press, a late despatch brings word that the plant of the Dayton Beater & Hoist Company, Dayton, Ohio, was damaged by fire December 5. Damage from the flames was estimated at $25,000 according to first reports, but water damage to machinery had not been ascertained when this announcement was made.

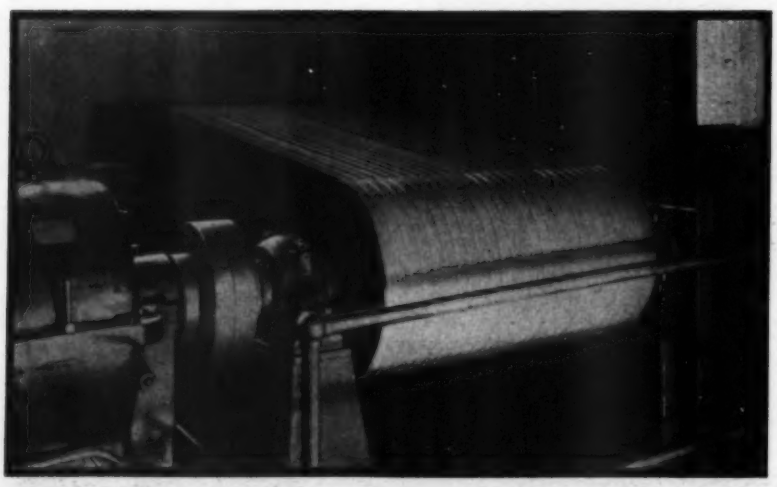
◆

AMERICAN CYANAMID BUYS ANOTHER SITE

The American Cyanamid & Chemical Corporation, New York City, has purchased land and buildings at Georgetown, S. C., and will establish a new chemical plant in that city to give better service to the chemical trade in the Southeastern states.

The property, situated on the Sampit River and consisting of seventy-two acres of land complete with plant, has dock facilities for vessels of 30-foot draft. The land was acquired from the Seaboard Railway and the plant, comprising large manufacturing buildings, boiler house and office building, has hitherto belonged to the Atlantic Coast Lumber Company.

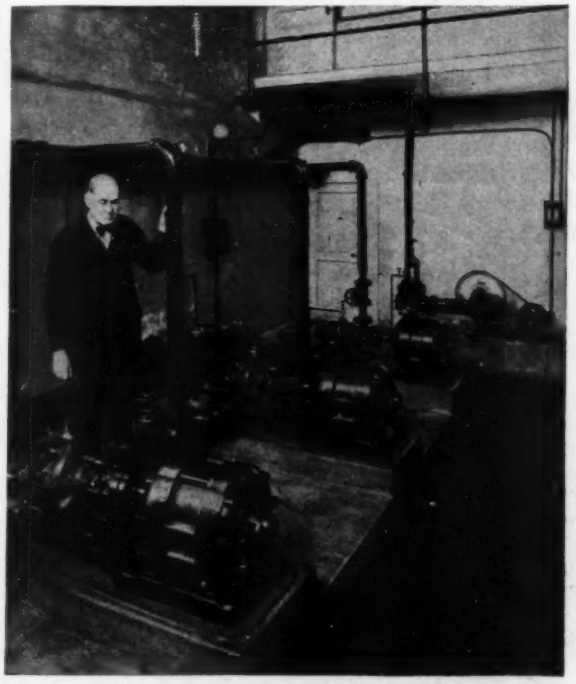
According to H. L. Derby, president of the chemical firm, construction and remodeling were to have begun at once. The first unit installed will be a plant for the production of sulphate of alumina which is used for water purification and in the manufacture of paper. The company has also announced that the chemical works now under construction at Mobile, Alabama, are nearing completion and will be ready for production shortly.



This matched set of 26 Goodrich V-belts is operating on a 550-hp. steam turbine drive in the plant of a large southern paper company. The drive provides no take-up and the matched belts shown above were installed twelve months ago. All of these 26 belts are still running in practically the same plane.

CITY SAVES $38,000!

Read How City of Hastings, Michigan, Saved Over $6300 a Year in Pumping Costs and Cut Water Rate 15% . . . by Replacing Old Pumps with Allis-Chalmers!



THE WATER DEPARTMENT AT HASTINGS, MICHIGAN. City Engineer Bert Sparks inspects the pumps that have saved the City of Hastings as much as $6372 in a single year! They are an Allis-Chalmers 2½" x 2" Type SJH, rated 250 gpm at 150 ft. head, and two Allis-Chalmers 3" x 2½" Type SJH pumps, each rated 350 gpm at 150 ft. head.

Water rate reduced 15%! Reserve fund of $11,000 built up by a department that previously showed a deficit. $38,000 saved in pumping costs!

That's what actually happened in the City of Hastings, Michigan, when City Engineer Bert Sparks replaced steam driven reciprocating pumps with three Allis-Chalmers motor-driven centrifugal pumps!

It's not hard to understand why! The former fuel cost for steam-driven pumps was 6c per 1000 gallons pumped. But the cost for the Allis-Chalmers motor-driven pumps is only 1¾c per 1000 gallons. That means an actual average saving of $6372 per year to the City of Hastings, in pumping costs alone! $38,000 since the pumps were installed!

Allis-Chalmers Engineering Cuts Costs!

No wonder that when a fourth pump was purchased in the fall of 1937, the City of Hastings specified Allis-Chalmers! For the engineering that has created Allis-Chalmers equipment means lower costs . . . actual savings in dollars and cents. And like savings result from Allis-Chalmers assumption of undivided responsibility for both pump and drive!

What Allis-Chalmers Centrifugal Pumps have accomplished for the City of Hastings, they can do for your city or for your factory. The Hastings installation is typical of the way Allis-Chalmers has solved municipal and industrial pumping problems throughout the country. There's an Allis-Chalmers representative near you. Let him show you how Allis-Chalmers pumps can actually pay for themselves . . . how many dollars they can save!

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OTHER COUNTRIES

SOUTH AFRICA'S NEW PAPER MILL

An interesting article describing the new mill erected by South African Pulp and Paper Industries at Geduld, South Africa, appeared recently in *The African World*, according to the British journal, *The World's Paper Trade Review*.

The mill, located twenty-eight miles from Johannesburg, was to have been completed November 1. It will produce various types of paper ranging from fine writings and printings to wrapping paper and paperboard. The mill site is well-situated, being near the sources of raw material and also adjacent to the various chief marketing centers of the Union. There are plentiful supplies of water and electrical power available, the article stated.

The chief materials required for papermaking at the new mill, which uses the Pomilio process, are wheat straw, pinewood, brine, resin and pigments. All of these, with the exception of pigments and resin, will be obtained from South African sources. The mill will supply the South African demand—a local market which, it is claimed, has a potential consumption of approximately £350,000 per annum. The plant contains two fourdriniers which are capable of producing paper up to a maximum width of 106 inches at speeds ranging from 60 feet to 500 feet per minute.

◆

▶▶▶ A NEW EGYPTIAN PAPER MILL, which is being erected at Tolumbat, near Alexandria, is expected to start operation during the summer of 1939. It will have a daily capacity of 60 tons. Production will be confined, in the beginning, to wrapping paper and cardboard. It is understood that the raw stock will consist of rice straw which is plentiful in Egypt and is obtainable at very low prices.

◆

▶▶▶ MANY DECORATIVE MATERIALS, mostly paper with or without foils, were again emphasized for shop window decorations at the Leipzig Fall Sample Fair held in Leipzig, Germany, recently. Packing materials exhibited had been manufactured with the requirements of the much-discussed "Four Year Plan" which entails the utmost economy in the use of paper, string, paperboard and similar materials for packing purposes.

◆

GERMANY TAKES OVER SUDETEN PAPER MILLS

The recent acquisition by Germany of the Sudeten districts has resulted in a considerable addition to the German paper industry. The mills now taken over by Germany represent an increase of 150,000 tons per annum. So that these firms may develop and continue the market, the German Minister for Economic Affairs has issued an ordinance placing a veto on any deliveries of paper being made by the German mills to the Sudeten district.

◆

JAPANESE PLAN OPERATION OF CHINESE MILLS

The rehabilitation of the existing paper plants in Central China will be undertaken by the Oji Paper Manufacturing Company, which practically monopolizes the Japanese wood pulp and paper industries. Mr. Kichinosuke Muta, chief of the Chosen paper plant of the Oji firm, recently visited Central China to make a detailed survey of the paper industry and discovered that 7 or 8 mills in that area might resume operations easily.

The Oji company is planning to take over management of these mills and to commence operations just as soon as the exchange licensing and power problems are solved. The firm has already obtained permission from the Japanese government to start operation of the mills.

◆

PAPER BAGS HELP PROTECT CATTLE FROM INFECTION

An interesting use of paper was brought to light recently in a news report from Denmark where, it is reported, kraft paper bags are used for packing feed stuffs for livestock. The use of kraft paper instead of fabric bags minimizes the danger of the livestock becoming infected with the hoof and mouth disease which, it is believed, is carried more readily by fabric bags than by paper ones. The paper bags, in addition, protect the contents better against external contamination as they are less easily penetrated by dirt.

◆

▶▶▶ THE MANUFACTURE OF PAPER from Botha Grass *(cymbopogon colouratus)* may be started in South India, it was reported recently. It is claimed that Botha grass contains 29 per cent cellulose and that the fiber, with an admixture of about 15 per cent bamboo pulp, can be used for the production of paper of ordinary quality.

◆

▶▶▶ General woods manager of Price Brothers & Company, *R. H. Nisbet* passed away suddenly at his home in Quebec recently. Previous to the World War, Mr. Nisbet was with British timber interests in Siam. In 1920 he came to Canada and on the invitation of Sir William Price, he joined the staff of Price Brothers, eventually becoming general woods manager. He served for several years on the Executive Council of the Woodlands Section of the Canadian Pulp and Paper Association, and contributed greatly to the progress of the Section.

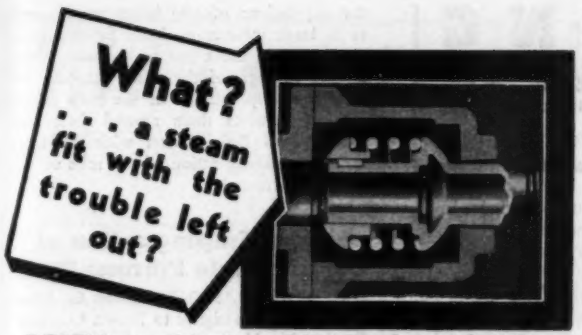
◆

INDIA MAKES WRAPPING PAPER FOR FIRST TIME

Wrapping paper is now being manufactured in India for the first time by the Forest Research Institute, Dehra Dun, from a mixture of mechanical wood pulp and chemical grass pulp, according to a recent report from the American Trade Commissioner in Calcutta.

"The chief interest," stated the president of the Institute, "lies in the fact that this is the first time in India that wrapping paper has been made from indigenous mechanical wood pulp in combination with chemical grass pulp.

"Our aim in evolving the new process," continued the president, "is to produce cheap wrapping papers on a commercial scale at a cost which will render them competitive with imported papers of a similar class."



HOW do you *oil* this "steam fit?" — how do you *adjust* it? . . . how do you *re*-pack it? The answer is that you don't do any of these things. Those two carbon-graphite rings totally eliminate packing. Their self lubricating quality eliminates oiling. The pressure within the housing causes a pressure-seal effect; so it is self adjusting.

Equally important is the ball-and-socket effect which compensates for angular misalignment of the roll or piping and the annular space between the outlet and the housing which compensates for lateral misalignment. Such a joint will outlast the ordinary packed "steam fit" many times over and save steam, power and time throughout its long service.

Hundreds of these joints have replaced the old style "steam fits" on paper machines, and their remarkable record will be your final reason for adopting them. The wide range of standard and special types meet every requirement of paper machines.

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PAPERMAKING PATENTS

IN THE UNITED STATES — Compiled by James Atkins, Registered Patent Attorney

Inquiries should be addressed to James Atkins, Munsey Building, Washington, D. C.

Apparatus for Producing Hollow Articles or Containers from Paper Pulp

Patent No. 2,131,813. Robert Marguerat and Eugene Marcel Chevrier, Montrouge, France. Application April 1, 1936, Serial No. 72,124, in France April 8, 1935. 8 Claims. (Cl. 92—54). Apparatus for the manufacture of hollow articles from liquid paper pulp, comprising bearing supports, a fixed horizontal shaft extending through said supports, a rotary mould carrier mounted to revolve upon said fixed horizontal shaft, means for effecting the periodic rotational movement of the said mould carrier, a plurality of open-ended female foraminous moulds mounted in said carrier, conduits in said carrier extending to said moulds and communicating in desired angular positions with other conduits passing through the fixed shaft for the timer communication of suction or pressure, a trough located above the rotary mould carrier connected with a supply of liquid paper pulp, means to maintain the level of the supply of paper pulp in said trough, outlets from said trough, funnels above said outlets the upper ends of which extend above the normal level of the liquid paper pulp in the trough, a submersible body normally maintained above the level of the liquid paper pulp in said trough, means for submersing said body to raise the level of the liquid paper pulp and cause a supply to pass into the funnels by overflow action, valve means controlling the outlets from the funnels operating in timed relationship with the movements of the submersible body and the rotation of the mould carrier to effect the filling of the female foraminous moulds when located in an upper position, foraminous male moulds for pressing the deposit in the female moulds when located in a position beyond the said upper position, means for inserting the said male moulds into the female moulds in timed relation with the movements of the carrier, hollow plunger means for carrying the male moulds, said hollow plunger means being in connection with suction-producing devices and pressure-supplying devices, fixed guide means for the reciprocation of said plunger means, and means for drying the ejected products, for the purposes set forth.

Woven Wire Belt for Paper Making Machines

Patent No. 2,132,252. Louis Nicholas Weber, Appleton, Wis., assignor to Appleton Wire Works, Inc., Appleton, Wis., a corporation of Wisconsin. Application January 5, 1938, Serial No. 183,461. 7 Claims. (Cl. 139—425). Woven wire fabric for paper making machines comprising interwoven warp and weft wires with knuckles produced in both the warp and weft wires, the warp wires throughout their length being of non-circular cross-section elongated in one dimension with flattened upper and lower faces of greater lateral extent than the thickness of the wire from top to bottom, said elongated dimension being parallel to the plane of the woven wire fabric whereby the weft knuckles cross the flattened faces of the warp wires and have their outer projected surfaces of a width substantially co-extensive with that of said flattened faces, the weft wires being tubular whereby they are deformable at their intersections with said warp wires to produce substantially flattened knuckles.

Insectproof Paper

Patent No. 2,129,659. Newton P. Easling, Pekin, Ill. Application July 22, 1936, Serial No. 92,018. Renewed January 27, 1938. 1 Claim. (Cl. 91—68). A paper for use in building construction including a felt base saturated with a mixture of asphalt paint, arsenate of lead and nicotine sulphate, said ingredients being substantially in the proportions of 25 per cent arsenate of lead, 73 per cent asphalt paint, 1 per cent nicotine sulphate and 1 per cent inert substances.

Paper Towel

Patent No. 2,130,375. Samuel F. Atkins, Cloquet, Minn., assignor to The Northwest Paper Company, Cloquet, Minn., a corporation of Minnesota Application April 8, 1936, Serial No. 73,384. 1 Claim. (Cl. 92—68). Paper toweling comprising a sheet of felted fibers provided with holes therein and corresponding tongues integral with the sheet and torn from the area of the holes, the tongues and holes having the edges feathered with fibers, all the tongues extending in one general direction along the sheet, whereby the sheet may be readily dispensed without danger of tearing.

Machine for Use in the Preparation of Paper Stock

Patent No. 2,133,449. Anton Joseph Haug, Nashua, N. H. Application May 5, 1937, Serial No. 140,881. 6 Claims. (Cl. 92—26). In a machine for refining paper stock and the like, the combination of a drum having an approximately cylindrical inner surface and adapted to hold a quantity of said stock, a plurality of rolls mounted in said drum and extending longitudinally thereof for engaging the stock and crushing it against said surface, means supporting said rolls for bodily rotation around the axis of said drum, for rotation around their individual axes, and for lateral movement toward and from the inner surface of said drum, the peripheral surfaces of said rolls and the inner surface of said drum both being provided with depressions, the depressions of one being so disposed as to leave intervening lands falling opposite lands on the other as the rolls rotate around the axis of the drum, whereby the relative bodily rotation of the rolls in the cylinder revolves them around their own axes due to their contact with the stock and the crushing action of the rolls on the stock is increased.

Multiple Impregnation of Compressible Fibrous Webs

Patent No. 2,132,863. Milton O. Schur, Berlin, N. H., assignor to Brown Company, Berlin, N. H., a corporation of Maine. Application August 4, 1936, Serial No. 94,156. 5 Claims. (Cl. 91—68). A method which comprises impregnating substantially throughout its body with an aqueous impregnating composition a cellulose fiber web tending to swell upon impregnation with such composition but being compressible to less than its original thickness, compressing the resulting impregnated and swollen web to less than the original web thickness and thereby dislodging aqueous impregnating composition from its surface portion, and infusing secondary liquid impregnant substantially only into said surface portion while the web is still recovering from its compressed condition and it is still wet with said aqueous impregnating composition.

Laminated Glassine Paper

Patent No. 2,128,739. Cornelius M. Connor, Ardmore, Pa., assignor to The Glassine Paper Company, West Conshohocken, Pa., a corporation of Delaware. Application July 6, 1935, Serial No. 30,077. 6 Claims. (Cl. 154—46). A grease and moisture proof laminated sheet material comprising essentially sheets of glassine joined by an intermediate film substantially confined to the inner surfaces of the sheets and comprising primarily a water-insoluble resinous material and wax, the resinous material being in sufficient amount to secure substantially increased adhesiveness as compared with wax alone, and the wax being in sufficient amount to render the film substantially moisture proof.

Paper Making Machine

Patent No. 2,127,698. Nickolas J. Niks, Munising, Mich. Application August 26, 1936, Serial No. 97,969. 5 Claims. (Cl. 92—44). In combination, a breast roll, a wire belt extending around said roll, at least one reach of said wire belt extending in a horizontal direction from said breast roll, means for conveying stock from a point below said breast roll including a passageway having one wall extending vertically downwardly from a point adjacent the periphery of and substantially beneath the center of the breast roll, and a second vertical wall opposite said first vertical wall thereby defining a vertical portion of said passageway below said breast roll, said second wall extending upwardly to a point above the breast roll, and an adjustable substantially horizontal slice extending from a point above the breast roll to said second vertical wall.

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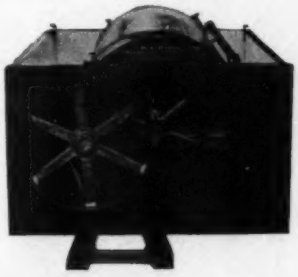

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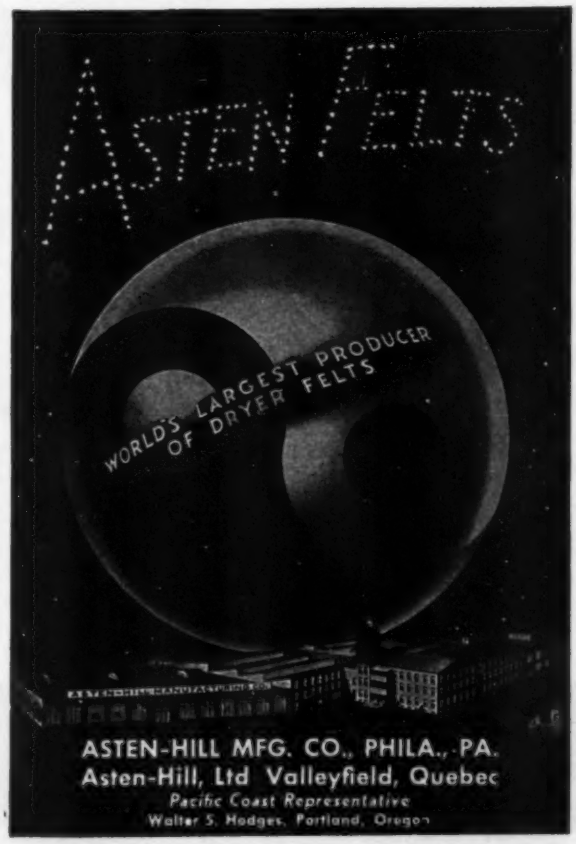

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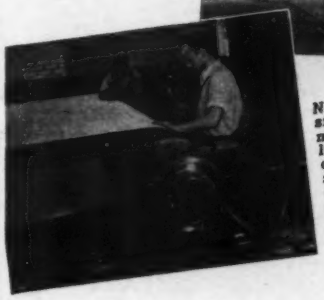

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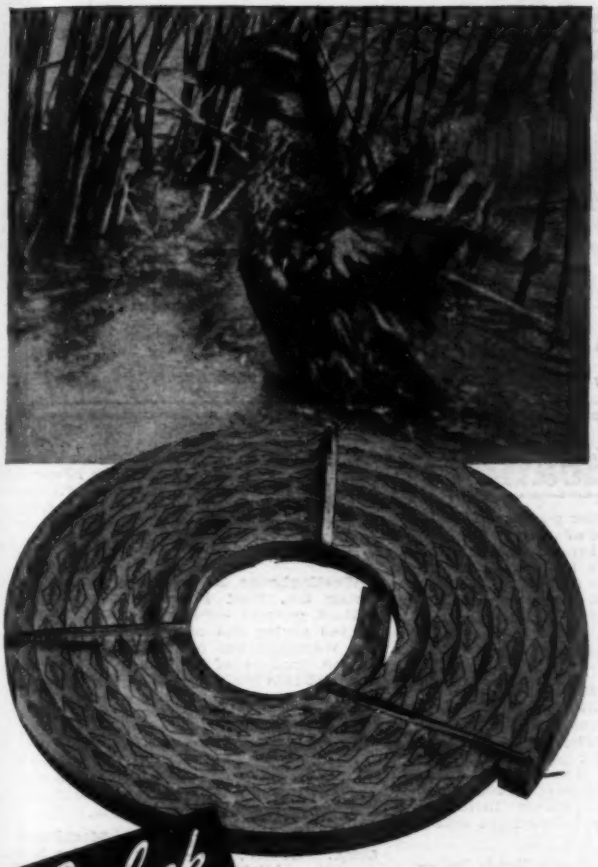

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RESISTS WATER!

WATER rolls off GARLOCK 262 like off a duck's back! Manufactured from a very fine cotton fabric, laid up with a high-grade white friction—GARLOCK 262 Special Hydraulic Packing gives long, dependable service on inside packed plungers of pumps handling either hot or cold water. Also recommended for hot or cold oils. Illustration shows GARLOCK 262 Coil. Rings with step joint—GARLOCK 261. Solid Rings—GARLOCK 260. All sizes.

THE GARLOCK PACKING CO.
PALMYRA, NEW YORK
In Canada: The Garlock Packing Co. of Canada Ltd., Montreal, Que.

GARLOCK

RYERSON

Uniform High Quality—at No Extra Cost

The Ryerson Certified Steel Plan gives you definite assurance of getting steel which has the features most desirable in the particular kind you order. When you need steel of any kind, draw on the nearest Ryerson plant. Immediate Shipment is assured.

Bars, Shapes	Shafting	Welding Rods	Alloy Steel
Structurals	Tubing	Solder	Tool Steel
Rails, Plates	Boiler Fittings	Stainless Steel	Floor Plates
Sheets—Strip	Concrete Reinforcing	Babbitt Metal	Safety Treads
Rivets, Bolts			

Write for the Ryerson Stock List

Joseph T. Ryerson & Son, Inc., *Plants at:* Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Jersey City, Philadelphia, Boston

Certified STEELS

RYERTEX BEARINGS

—CLEANER —LAST LONGER

They are water lubricated • Consume less power • Help produce cleaner stock • Quickly replaced • Will run submerged in pulp stock • Last longer • Practically unaffected by acid solution. *Write for Bulletin 42*

Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Jersey City, Philadelphia, Boston

RYERSON

"You Can Take It For Granted"—

SOLVAY
Liquid Chlorine

IS ALWAYS STANDARD!

When a Company has maintained the most rigid of production standards over a period of 55 years . . . you can rely upon its name and on its products! Scientific methods . . . exacting supervision have made SOLVAY LIQUID CHLORINE a bleaching agent on which you can depend . . . that you can take for granted will be always pure, always uniform, when you receive it!

And when you place your order with Solvay for LIQUID CHLORINE . . . SODA ASH . . . CAUSTIC SODA . . . you are guaranteed fast, sure, on-time deliveries. You are relieved of worry, of check up . . . time spared for your own problems.

Write for full information and prices. Ask for free copy of 44-page book "SOLVAY LIQUID CHLORINE."

SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 RECTOR STREET NEW YORK

ENGLISH ECCO CLAYS TRADE MARK CLAYS

UNIFORM • SUPERIOR • DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

New Catalogues and Publications

American District Steam Co., North Tonawanda, N. Y.—A new bulletin describing the company's Adsco rotary condensation meters has been put out recently by the firm. The bulletin (No. 35-80A) contains illustrations and much data relative to the product's use, showing how the meters measure the steam consumption of heating systems, hot water heaters, unit heaters, blast coils, heat exchangers, etc.

Chicago Electric Co., Chicago, Ill.—This company has recently issued a new catalogue listing the rebuilt electrical and power equipment the firm is offering. The catalogue contains thousands of listings of alternating and direct current constant and adjustable speed motors ranging in size from 1 hp. to 1,000 hp. motor generator sets, alternating and direct current generators, steam turbine and engine generator sets and other electrical and power equipment.

Columbia Alkali Corp., Barberton, Ohio —An interesting new booklet listing and describing the complete line of Columbia's products has just been put out by the alkali firm. This booklet covers the complete line of soda ash, caustic soda, liquid chlorine, sodium bicarbonate, calcium chloride and modified sodas. It lists the packings for each product and explains the various forms in which the more important products are produced. A convenient and novel form of indexing by means of graduated page sizes is a unique feature of the release.

De Laval Steam Turbine Co., Trenton, N. J.—A very interesting catalogue (B-5) describing this company's single suction multistage pumps has been issued recently by this firm. The catalogue, thirty-six pages in length and replete with photographs showing construction features as well as installation views, gives the reader a clear and complete account of the design and usages of the product. This catalogue is exceptionally well written and is so laid out as to present an extremely interesting picture of every phase of the pumps' working principles. Cross-sectional drawings, graphs and other data aid materially in making this publication a worthwhile and valuable reference.

The Japan Cellulose Industry Reporters, Ltd., No. 3 Kamifujimai-cho, Komagome, Nogoku, Tokyo, Japan—This organization has recently published a report on the Japanese cellulose industry. The report contains news items relating to the fiber industries of Japan, market reviews, and statistics on imports and exports of paper and pulp. Information as to the availability of this report may be obtained from the company direct.

Milton Roy, Philadelphia, Pa.—A new bulletin (No. 938) describes and illustrates several improved models of single and multiple unit motor pumps designed for pumping any type of chemical in exactly the desired volume against pressures ranging from 0 to 15,000 pounds. The bulletin describes features of design and construction, and shows typical installations and gives specifications on 172 pump sizes and types, including capacities, maximum pressures and motor horsepower.

Wm. B. Scaife & Sons Co., Oakmont, Pa.—A new type of filter, designed to remove iron minerals from water by a new process known as catalytic filtration, is fully described in a recent bulletin issued by this firm. The bulletin (No. 299) contains much of interest regarding the equipment and process including much data and other informative material.

M. B. Skinner Co., South Bend, Ind.—An extremely interesting catalogue (No. 38-A) containing illustrations and descriptions of repair clamps and saddles for steel and cast iron pipe, has been issued recently by this company. Thirty-two pages in length, this catalogue is replete with photographs and specification tables together with informative written material relative to the repair of pipe leaks. Of special interest is the "leak loss" chart which shows the expense of leaks in air, steam, water and oil lines. This catalogue should be of value to any industry.

Stearns Magnetic Mfg. Co., Milwaukee, Wis.—Two new bulletins have recently been issued by this firm. One bulletin (No. 135) describes and illustrates the company's high duty portable drill stand magnet which increases the usefulness of the drill stand by permitting the unit to be easily conveyed and spotted to almost any conceivable position or place where drilling, tapping, reaming, hole sewing or similar operations are required. The other bulletin (No. 225) gives the complete story of the company's high duty magnetic clutches and combination clutch-brakes. Cross-sectional drawings, specification tables and photographs are included in the latter presentation.

Stephens-Adamson Mfg. Co., Aurora, Ill.—A new bulletin announcing the new Tellevel automatic storage control manufactured by this firm, has been released lately by the company. This new product automatically controls the level of material in any bin. The bulletin explains the working principal and construction of the equipment by means of drawings and written material.

Thwing-Albert Instrument Co., Philadelphia, Pa.—A new bulletin (M-382) describing and illustrating this company's instruments for measuring and controlling temperature and for testing paper, has been issued recently by the firm. Of the paper testing group there are illustrated in the release, the Elmendorf tearing tester, stiffness-softness tester, white water sampler, formation tester, electro-hydraulic tensile tester and others of specific interest to the paper industry.

Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.—The 1939-40 general catalogue, listing some 100,000 styles and sizes of products of the Westinghouse organization, is now in the process of publication. On the pages of this book is written the story of electric power, from generators to washing machines and toasters, from titanic steel mill motors to tiny one-twentieth horsepower motors to drive electric shavers. A special copy of this catalogue was included among the exhibits of this age deposited within the Time Capsule at the New York World's Fair grounds.

Worthington Pump and Machinery Corp., Harrison, N. J.—This company has recently published a new bulletin (W-423-B5) on its vertical triplex and single-acting power pump. Specifications, sizes and ratings, together with drawings, photographs and general written material serve to give the reader a clear and accurate picture of the product.

BOOKS

Air Conditioning—This book is a cloth-bound volume of nearly 600 pages (6 in. by 9 in.). It includes 15 chapters that discuss air and its properties; load calculations; duct design and air distribution; registers, grilles and air diffusers; heating and humidification; fans, cooling coils and air washers; fundamentals of refrigeration; compressors, condensers, evaporators and allied equipment; well-water cooling, ice cooling, and storage systems; evaporative condensers and cooling towers; small store installations, and unit coolers; automatic control of air conditioning; air cleaning and purification; and codes and ordinances. Charles A. Fuller is the author of the volume; David Snow, his collaborator; and The Norman W. Henley Publishing Company, 2 West 45th St., New York, its publisher. The book is priced at $4.00 a copy.

Casein and Its Uses—Originally presented in German by Hans Hadert, Consultant to Adhesives Industry, this volume is an English translation by Dr. Henry Goldsmith of the second German edition with some additional formulae covering uses of casein in industry. The book is printed offset; is cloth bound; and consists of about 100 pages. It treats of the chemistry and manufacture of casein, casein adhesives, casein paints and colors, and other applications of casein. The book is copyrighted by the Chemical Publishing Co. of N. Y. Inc., 148 Lafayette St., New York, N. Y. and is priced at $3.00 a copy by this concern for American distribution.

FOR SALE—Eight felts. 4 New Albany, style 220 special, as follows: 1 #26090, size 66" x 72'0" (corrugated pulp); 1 #26091, size 66" x 72'0" (corrugated pulp); 2 Kieckhefer #4898 and #4899, size 66" x 72'0". 4 dryer felts as follows: 1 #2645, 3/0 70" x 27 2/3 yd., weight 124 lb.; 1 #2649, 3/0 70" x 27 2/3 yd., weight 124 lb.; 1 #2732, 3/0 68" x 28½ yd., weight 124 lb.; 1 #6584, 3/0 72" x 34 2/3 yd., weight 162 lb. Foregoing felts were used on a cylinder strawboard machine. Please submit an offer when replying to this advertisement. Address Box 277, THE FRITZ PUBLICATIONS.

SMALL EFFICIENT ORGANIZATION OF TECHNICAL MEN AND SALESMEN desires contact with concerns interested in development and sale of commodities, equipment and processes for the pulp and paper trade. Address Box 278, THE FRITZ PUBLICATIONS.

FOR SALE—Priced Reasonable. 2—Appleton Machine Co. No. 2 Jordans with motors. 1—Horne & Sons Co. Jordan without motor. 1—Worthington centrifugal pump. Capacity 5000 gal. per minute. 110' head. 1—15" globe steam valve, 400 lb. pressure, cast steel. 1—Carthage Machine Co. pulp shredder. 1—Hamblet Machine Co. 112" double rotary paper sheet cutter, also twenty-four shaft back winding stand and Moore & White Co. lay boy, 72" x 112" capacity. Address Peavey Paper Products Co., Ladysmith, Wis.

The Paper Industry Safety Contest

July 1, 1938 to June 30, 1939

Out of 165 mills reporting for October, 36 have perfect record

PERFECT SCORES

Division I—Pulp and Paper Mills

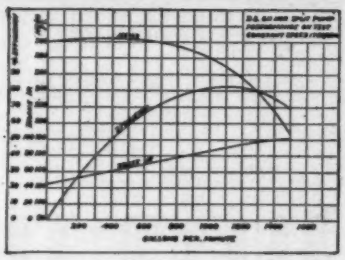
	PARTICIPANT	MILL	LOCATION
GROUP A	Hollingsworth & Whitney Co.	Algonquin & Taconnet Mills	Waterville, Me.
	Oswego Falls Corporation	Fulton	New York
	Anglo-Canadian Pulp & Paper Mills, Ltd.	Quebec City, P. Q.	Canada
GROUP B	Consolidated Paper Corp., Ltd.	Belgo, Shawinigan Falls	Canada
	Crown Zellerbach Corporation	National Paper Products Co. Division	Port Townsend, Wash.
	Southern Kraft Corporation	Continental Division	Marinette, Wis.
GROUP C	Hoberg Paper Mills, Inc.	Fibre Division	Green Bay, Wis.
	Strathmore Paper Company	Woronoco	Massachusetts
	Rising Paper Company	Housatonic	Massachusetts
GROUP D	American Writing Paper Corp.	Riverside No. 2	Holyoke, Mass.
	Bird and Son, Inc.	Phillipsdale	Rhode Island
	The Mead Corporation	Sylva Paperboard Co.	Sylva, N. C.
	The Mead Corporation	The Harriman Company	Harriman, Tenn.
	Fort Orange Paper Co.	Box Board Mill	Castleton on Hudson, N. Y.
	American Writing Paper Corp.	Nonotuck Division	Holyoke, Mass.
	Spaulding Fibre Co., Inc.	Milton	New Hampshire
	United States Gypsum Co.	North Kansas City	Missouri
	American Writing Paper Corp.	Mt. Tom Division	Holyoke, Mass.
	Central Fibre Products Co.	Vincennes	Indiana
	Ponds Extract Company	Seymour	Connecticut
	The Mead Corporation	Nashville	Tennessee
	Rogers Fibre Company, Inc.	Fibreboard Mill, Div. 1	Bar Mills, Me.
	Hollingsworth & Whitney Co.	Aroostook & Cobbossee Mills	Gardiner, Me.
	Central Fibre Products Co.	Mt. Carmel	Illinois
	International Paper Co.	Riley No. 23	Riley, Maine
	Hollingsworth & Whitney Co.	Abenaquis Mill	Madison, Me.

Division II—Paper and Board Re-Manufacturing

Container Corp. of America	Chicago	Illinois
Fort Orange Paper Co.	Paper Box Plant	Castleton on Hudson, N. Y.
Bird and Son, Incorporated	Chicago	Illinois
The Container Company	Van Wert	Ohio
Kimberly-Clark Corporation	Atlas Mill	Appleton, Wis.
Container Corp. of America	Anderson	Indiana
Gaylord Container Corp.	Dallas	Texas
Bird and Son, Incorporated	Shreveport	Louisiana
Gaylord Container Corp.	Houston	Texas
Bay West Paper Company	Green Bay	Wisconsin

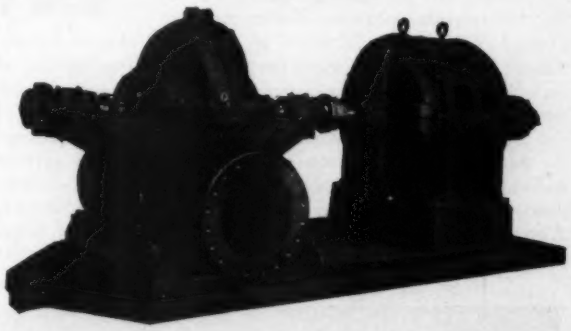
The MORRIS HYDRAULIC COLUMN

News of interest to Centrifugal Pump Users



High, wide and handsome...

This eulogistic group of adjectives particularly well characterizes the efficiencies of Morris Centrifugal Pumps. Morris efficiencies are uniformly high—frequently exceeding 90% in favorable operating conditions. Equally important, Morris efficiency curves are wide—that is, Morris Pumps operate over a wide range of capacities at high efficiencies. And finally, if "handsome is as handsome does", Morris Pumps certainly do handsomely by their owners, for Morris Pumps *continue* to operate at high efficiency for long periods. Would you like to know more about pumps with these desirable characteristics? A post card will bring complete information.



A pump that reached voting age . . . with a perfect health record

Twenty-one years of constant operation without once requiring attention of any kind or even removal of the upper half of the casing for inspection—this is the record of a typical Morris Water Supply Pump installation. For 74 years, Morris has been building centrifugal pumps noted for sturdiness and long-wearing qualities. In addition, the Morris Pumps of today are further noted for their exceptionally high efficiency. Here are two mighty good reasons why you should be sure to get a Morris quotation when you need centrifugal pumps for any requirement.

MEMBER

For authoritative recommendations on any pumping problem, write to Morris Machine Works, Baldwinsville, N. Y. Representatives in principal cities.

CLAYS

IMPORTED DOMESTIC

PAPER MAKERS IMPORTING CO. INC. MILLTOWN, PENNSYLVANIA, U.S.A.

DOMESTIC—TALC AND WHITING

POTPOURRI

695 YEARS OF SERVICE

Talk that men past 40 have small chance in today's industry is largely based on the assumption that the elder workers have been abandoned or shunted to the pension rolls before their days of productive labor are over.

A substantial argument in the negative has recently been provided by the Hazard Wire Rope Division of the American Chain and Cable Company, Inc., Wilkes-Barre, Pennsylvania. This wire rope company comes forward with the statement that its payroll carries the names of 14 employees, each with individual records of from 40 to 67 years of service, these men collectively representing a total of 695 years of continuous employment with one organization. Eight of these men are shown on the accompanying illustration. The remaining six are not shown because their duties take them away from Wilkes-Barre.

◆

MELLON ANNOUNCES NEW FELLOWSHIP

The establishment of an Industrial Fellowship in the Mellon Institute, Pittsburgh, by the American Air Filter Company, Inc., of Louisville, Ky., was announced recently by Dr. Edward R. Weidlein, director of the Institute.

The Fellowship will investigate broadly, materials of value in the construction of filters for air-conditioning systems. It will be the aim to gain through this research new knowledge to effect all possible improvements in the devices manufactured by the donor. The Fellowship will have the direct cooperation of specialists on the staff of the Multiple Industrial Fellowship on air hygiene in operation in the Institute. Dr. Frank F. Rupert, who has been appointed to the incumbency of the Fellowship, has been a member of Mellon Institute since 1913 and has been associated with the Fellowship on air hygiene since 1935.

◆

CANADIAN MILL HAS EXCELLENT SAFETY RECORD

The Belgo Division of the Consolidated Paper Corporation, situated at Shawinigan Falls, Quebec, has, to date, operated in excess of 734,000 manhours without sustaining a lost-time injury. This record represents a period of 251 days, during which time there has been but three injuries requiring medical attention but involving no loss of time. The mill was "The Safest Mill in Canada" in 1936 with a frequency rate of 1.173.

◆

SAFETY CALENDARS

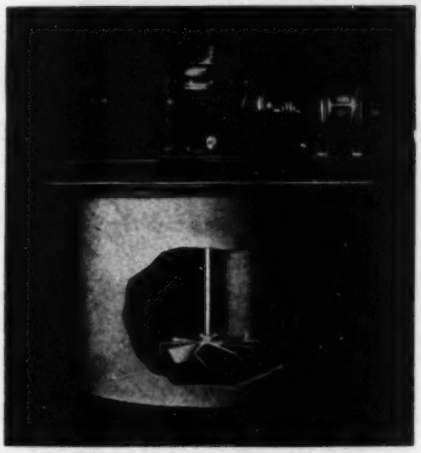
The new 1939 Calendars of the National Safety Council, which contain many safety facts and safety hints, are exceptionally attractive.

Each page of the calendar depicts a scene of family life and points out the value of safety and safety precautions. The series of twelve, in full color, is called Everyman's Family and is designed to suggest to owners of the calendars the practical application of safety at work, at home, on streets or highways or at play. This sparkling combination of attractive color illustration, dramatic presentation and important safety lessons, as well as the calendar itself, would lend itself well to any mill's safety program.

Eight of the Fourteen Hazard Old-Timers

Left to right, (back row): Philip Henry, 46 years of service; George Hoats, 67; Wally Schuler, 49; Pat O'Toole, 57. (Front row): Pete Swinburne, 58; Hugh Murray, 50; Tony Blaum, 49; Bill McCarthy, 45.

"NEW ENGLAND" AGITATORS in Paper Mills–



1. Speed up clay mixing–

In one mill, using slow moving paddle type stirrers, density of samples varied widely. After installing "New England" Agitators, with turbine type stirrers, a 3000 lb. load of clay is so thoroughly mixed in 10 minutes that samples vary in density less than 1% from the desired mix.

2. Improve stuff chest agitation –

Results from the use of New England Agitators, in stuff chests carrying 3% to 4% stock, have made many users enthusiastic; claiming more efficient mixing and more uniform mix.

■

Successful agitation requires correctly designed equipment PLUS the judgment of Engineers who have specialized in paper mill mixing problems for many years. For quotation on your next requirements—or for Bulletin 380—address,

NEW ENGLAND TANK & TOWER CO.
81 TILESTON STREET, EVERETT, MASS.
NEW YORK OFFICE - 11 WEST 42nd STREET

WHY PAY AND PAY For Quality Production?

Making this head box out of Armco Stainless Steel saved weight and space. Its corrosion resistance means a longer useful service life. And because of its smooth surface it is easy to clean out the accumulated slime.

True, you can get *quality* production at the expense of rejections and waste. Yet by using Armco Stainless Steels for equipment exposed to corrosive attack, you can achieve it at much less cost *per year of service.*

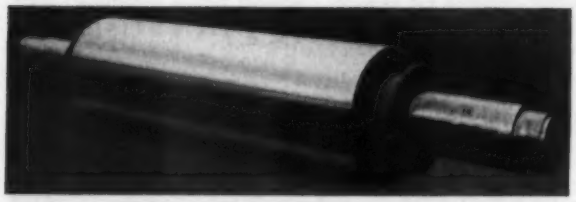
This durable metal is highly resistant to corrosion and abrasion. Pulp and paper come through clean—free from stains and discoloration. Chemicals used in pulp and paper production have little effect on Armco Stainless Steels. You save money on lowered maintenance costs and longer equipment life.

There is a correct grade of Armco Stainless Steel for nearly every paper mill application. It is ideal for the cheaper grades of paper as well as the finer grades. Let us help you select and apply it—or just specify "Armco Stainless Steel" for new equipment. The American Rolling Mill Co., Executive Offices, 1691 Curtis St., Middletown, Ohio.

ARMCO
ARMCO STAINLESS STEELS

CENTRIFUGALLY CAST

ROLLS •• ROLL COVERS



BRONZE • IRON • MONEL

3" - 46" DIAM., ANY WIDTH for PRESS, BREAST, COUCH, WIRE, FELT, COOLING and HEATING

SANDUSKY Centrifugally Cast Rolls and Roll Covers are seamless, rigid, strong and smooth. They stay round and true because they are free from fabricating strains. They are dense, homogeneous and long-wearing. They are made to make good paper.

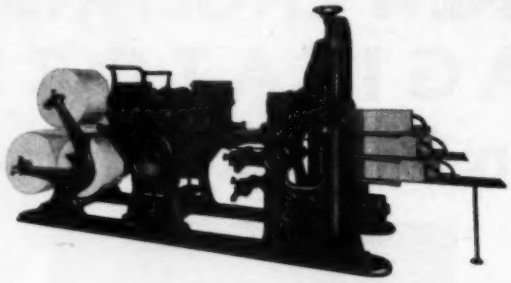
Sandusky Rolls and Roll Covers pay their way many times over; 10-15-20 years service—or longer, depending on use. Many will outlive the machines on which they are performing.

Whenever you plan to re-cover old rolls or install new rolls—specify Sandusky Centrifugally Cast.

Write for Illustrated Bulletin No. 537

Sandusky Cast is PRESSURE CAST

Sandusky Foundry & Machine Company



High Speed Napkin Folder

It makes them all—plain, embossed and printed—quarter fold, dispenser fold, sixteenth fold and eighth fold. From 1,000 to 2,000 per minute—every napkin perfectly folded and delivered in a smooth, clean pack ready for wrapping. Used by every large producer in United States and foreign countries.

Hudson-Sharp Machine Company
Green Bay, Wisconsin

729,290 Tons Annually (2,330 Tons Daily) of Southern Kraft Pulp

Screened clean by 22 APMEW knotters (Each 105 tons daily driven by ONE H.P. Motor) and 28 APMEW Screens (First Screens each handling 105 tons daily using 35 H.P.) in new Kraft Mills of the South.

CLEAN PULP IS BEING PRODUCED—WITH GREAT EFFICIENCY by Centrifugal Separation Principle and Inward Flow Screening.

TEN CENTS per ton pays for these 22 APMEW Knotters and 28 APMEW Screens in one year. SAVINGS in power, labor, maintenance, repairs, etc.; usually repay the investment in less than one year, and thereafter makes good earnings.

AMERICAN PAPER MACHINERY & ENGINEERING WORKS, Inc.
GLENS FALLS, NEW YORK

When you specify Coes Micro-Ground Knives you will put into service the longest and broadest experience in the machine knife industry.

COES
Micro-Ground
Knives are standard equipment with users who want the best.

Behind each Coes knife is more than one hundred years of experience. We are not content to rest on our record, but are constantly improving our product and meeting and solving new problems such as higher speeds, new materials to be cut and new applications of edges.

"That he who cuts may cut well"

LORING COES COMPANY
WORCESTER, MASS.

Improve Your

ACID PLANT OPERATIONS

INVESTIGATE the improved processes offered by Chemical Construction Corporation for production of high-strength acid and for independent recovery of SO_2 from relief gases.

These processes modernize old acid plants at low cost, and produce cooking liquor of higher SO_2 content than heretofore available. Free SO_2 of 7.5 per cent or higher strength is easily obtainable.

High-strength acid together with our improved circulation system, indirect heating and full automatic control for digester operation make more pulp in each cook, make the quality high throughout the batch, shorten the cooking period, increase mill output and cut operating costs substantially.

We furnish acid plants from sulphur or pyrites burner to pressure storage of fortified cooking liquor—complete.

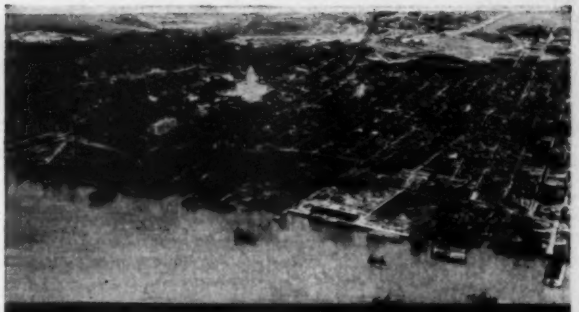
Let us submit suggestions and costs.

Chemical Construction Corporation

CHEMICO

Consulting, Contracting and Erecting Chemical Engineers

30 Rockefeller Plaza NEW YORK



27 Layne Well Units
FOR THE CITY OF CAMDEN, N.J.

Definitely knowing that their one-hundred small driven Morris Station wells were costly to operate, inefficient, and inadequate for either present or future needs, the City of Camden, N. J., placed their water problem before the Layne New York Company. In 1922 a contract for 6,000,000 gallons daily (four wells) was awarded. Highly satisfied with the splendid efficiency and low operating cost of the first four wells City Authorities contracted for 10,000,000 gallons more per day. Five more Layne Well Units were installed. In 1925 nine of the Morris Station wells were Layne Gravel Wall equipped, adding another 17,000,000 gallons per day.

In all, Camden now has twenty-seven Layne Unit Wells with a capacity of 45,000,000 gallons per day. High efficiency due to Layne Pumps and Well Engineering features, gives Camden water at a cost of 1.5c per 1,000 gallons. $200,000.00 a year from the Water Division's net profit are annually returned to the City's general fund.

Such problems as faced Camden may be similar to your case. More details of how Layne Well Units give more water —at lower cost, will be sent gratis. Address LAYNE & BOWLER, INC., DEPT. P, MEMPHIS, TENN.

AFFILIATED COMPANIES

LAYNE-ARKANSAS CO., STUTTGART, ARK.
LAYNE-ATLANTIC CO., NORFOLK, VA.
LAYNE-CENTRAL CO., MEMPHIS, TENN.
LAYNE-NORTHERN CO., MISHAWAKA, IND.
LAYNE-LOUISIANA CO., LAKE CHARLES, LA.
LAYNE-NEW YORK CO., NEW YORK CITY AND PITTSBURGH, PA.
LAYNE-NORTHWEST CO., MILWAUKEE, WIS.
LAYNE-OHIO CO., COLUMBUS, OHIO
LAYNE-TEXAS CO., HOUSTON AND DALLAS, TEXAS.
LAYNE-WESTERN CO., KANSAS CITY, MO., CHICAGO, ILL., MINNEAPOLIS, MINN., AND OMAHA, NEBRASKA.
LAYNE-BOWLER NEW ENGLAND COMPANY, BOSTON, MASSACHUSETTS.
INTERNATIONAL WATER SUPPLY, LTD., LONDON, ONTARIO, CANADA

LAYNE

PUMPS & WELL WATER SYSTEMS
For Municipalities, Industries, Railroads, Mines and Irrigation

PERSONALS

TAYLOR INSTRUMENT ANNOUNCES CHANGES

Associated with the Taylor Instrument Companies nearly 46 years, Herbert J. Winn, president of the company, is now chairman of the board of directors. Lewis B. Swift, who has served as vice-president in charge of engineering and research, succeeds Mr. Winn as president. Other administrative changes within the company included the appointment of Karl H. Hubbard as chief engineer and Dr. H. L. Mason as head of the research division, succeeding Mr. Hubbard.

Mr. Winn, retiring president, has served as president and treasurer of the Taylor Instrument Companies for 25 years. When he joined the company in March, 1893, the combined office and plant forces did not exceed 60 employees. During Mr. Winn's association with the company, he has seen the business develop from one of Rochester's (N. Y.) pioneer industries into the world's largest manufacturers of thermometers and barometers. The normal working force has increased to 1,200 and the Taylor line now includes thousands of different instruments. Mr. Winn will maintain an active interest in the company as well as in his numerous financial and philanthropic activities.

Mr. Swift, the new president, joined the Taylor firm in 1904 after graduation from high school. In 1905 he entered Cornell University and worked for Taylor during vacations. After receiving his M.E. degree he rejoined the company on a full-time basis. He was in the Industrial Sales Department until 1919 when he organized and took charge of the Sales Engineering Department. Mr. Swift was elected a director of the company in 1928 and the following year he became chief engineer. Since 1934 he has been vice-president in charge of engineering research and design.

Other officers chosen by the board of directors at a recent meeting include: Vice-presidents, P. Richard Jameson, Henry W. Kimmel, and Fred K. Taylor; treasurer, Herbert J. Noble; secretary, Henry W. Kimmel, and assistant secretary, Geo. H. Taylor.

◆

HONOR HERB'S 50 YEARS OF PAPERMAKING

Celebrating fifty years in the paper manufacturing field, J. J. Herb, president of Westminster Paper Company, Ltd., New Westminster, B. C., and the Pacific Coast Paper Mills, Bellingham, Wash., was guest of honor at a recent dinner in the Terminal City Club, Vancouver. Presentation of a handsome shotgun was made to Mr. Herb who was leaving on a hunting trip to the Cariboo.

Mr. Herb's papermaking career started in Wisconsin when he was 15 years old. In 1912 he came to Ontario and ten years later to New Westminster where he founded the Westminster Paper Company. Since 1927, when the Bellingham subsidiary began operations, Mr. Herb has lived in New Westminster. His three sons are following in their father's footsteps, Elmer Herb being vice-president and general manager of the Westminster firm, P. J. Herb holding same position in the Bellingham firm, and Francis Herb being sales manager in Seattle.

◆

Herbert J. Winn (left) retires as president of Taylor Instrument Companies and is made chairman of the board. He is succeeded by Lewis B. Swift (right) formerly vice-president in charge of engineering and research.

▶▶▶ *Johan Richter,* chief engineer of the Bleaching Department of Karlstads Mekaniska Verkstad, Sweden, recently made a trip to North America, which gave some Canadian and American papermakers an opportunity to discuss with him the technical and operating details of the Kamyr continuous bleaching system, of which Mr. Richter is one of the inventors.

◆

▶▶▶ Now production manager for the Lake Side Central Company of Chicago, is *George H. Langhauser,* formerly manager of the Tablet Division of the White & Wyckoff Manufacturing Company, Holyoke, Mass. The Massachusetts firm is closing down its Tablet Division. Mr. Langhauser had been associated with White & Wyckoff for more than 20 years and prior to that was connected with the American Pad & Paper Co.

◆

▶▶▶ *D. E. Cousins,* formerly associated with the Champion Paper & Fibre Company, Houston, Texas, is now connected with the Hollingsworth and Whitney Company and will assist in the preliminary work on the New England company's development near Mobile, Alabama.

◆

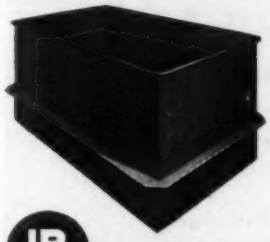
▶▶▶ Recently appointed director of the Capital Wire Cloth and Manufacturing Company, Ltd., is *Thomas L. Dunbar,* president of Chemipulp Process, Inc., Watertown, N. Y. Mr. Dunbar has been closely associated with the pulp and paper industry for years.

◆

J. E. BRYAN NOW VICE-PRES. OF TRAFFIC LEAGUE

J. E. Bryan, general traffic manager of the Wisconsin Paper and Pulp Manufacturers' Traffic Association, was recently elected vice-president of the National Industrial Traffic League at its annual meeting in New York City. This is the first time in the history of

TANKS FOR EVERY PURPOSE



LITTLEFORD BROS. with 54 years' experience in making tanks from Stainless Steel, Stainless Clad, Monel Metal, Nickel, Nickel Clad, Copper Clad, Plain Sheet or Plate Steel, can design or make any size or shape Tank desired. No matter how large or small, your needs may be, Littleford Bros. will be glad to furnish an estimate. Send in your specifications or write today to see our engineer. Any information on Tanks will be gladly furnished without obligation.

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Consultation—Reports—Valuations—Estimates—Paper and Pulp Mills—Hydro-Electric and Steam Power Plants—Plans and Specifications

For Sale—Paper Machinery

Paper Machines: 72 in., 126 in.
Experimental Fourdrinier Paper Machine with wire 46 in. by 50 ft., 2 presses, Minton vacuum dryer, worn gear drive.
Calender Stacks: 116 in., 114 in., 104 in., 100 in., 90 in., 88 in., 84 in., 76 in.
Super Calenders: 44 in., 72 in., motor driven.
Sheet Cutters: 72 in., 94 in., 108 in., 136 in., duplex with or without layboys: single: 44 in. to 100 in. (20 cutters and layboys).
Slitters: 60 in. Cameron. 60 in. Kidder.
Trimmers: 2-50 in. Seybold.
Dryers: Several hundred, from 42 in. to 100 in. face.
Fourdrinier Part: Late type, Moore & White, takes wire 80 in. by 50 ft., with Voith inlet and suction couch.
Jordans: 3 Jones, 2 Emersons, 2 Appleton.

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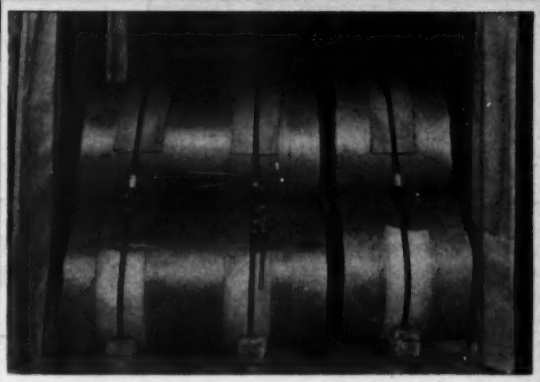
SKANEATELES FALLS, N. Y.

High Density BEATERS

Hundreds of highly successful installations in service.

THE MIDWEST-FULTON MACHINE COMPANY
DAYTON, OHIO, U. S. A.

ROLLS OF PAPER CAN'T JAR LOOSE!



When freight cars hit at from 5 to 12 miles an hour, the impact is considered rough handling. Yet these rolls of paper stay piled and secure, delivered as they were loaded at the mill.

Stanley Car Banding follows the curves of the rolls thus distributing the pressure. Holds them in a "floating load" that shifts slightly as a unit to absorb even heavy shocks. Banding for any shipment, compared with wood bracing, reduces damage claims substantially, according to the Freight and Claims Division of the Association of American Railroads.

Stanley Car Banding is cheaper, too. In some instances it cuts labor for bracing by as much as 75%; materials by as much as $30 per car; dunnage by as much as 1400 pounds per car.

You get them all . . . quicker starts for your shipments . . . improved service to your customers . . . better protection for your goods, with the complete equipment described in the new Stanley Car Banding catalog. Write for it today! Stanley engineers will be glad to design a safe, economical load for you without obligation. The Stanley Works, Steel Strapping Division, 167 Lake St., New Britain, Connecticut.

Stanley Type "K" Car Band Sealer

Stanley Type "G" Car Band Tightener

Stanley Electric Car Banding Tool

STANLEY

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CHEMICAL PULP MILL ENGINEERS
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LINING ENGINEERS INC.
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RESISTING LININGS
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MINNEAPOLIS, - MINN.

the League that a representative of the paper industry has been elected to office other than that of treasurer, a post now held by R. W. Campbell of the Butler Paper Corporation.

The National Industrial Traffic League is an organization dealing with transportation problems of all industries throughout the entire United States. Every line of endeavor, except transportation, is represented. It is purely a shippers organization.

DUTTON HEADS WHITE & WYCKOFF

Harry Dutton, for the past four years assistant treasurer of the White & Wyckoff Manufacturing Company, Holyoke, Mass., has recently been elected president and general manager of the firm to succeed George R. Burkhardt who resigned a short time ago. Mr. Dutton's former position will be filled by Edward P. White, son of Edward N. White, chairman of the White and Wyckoff board of directors and treasurer of the concern.

Harry Dutton

S. D. WELLS IS NOW AT INSTITUTE

Identified with the pulp and paper industry for the past thirty years as a research engineer, Sidney D. Wells has accepted an appointment as research associate and as an instructor in pulp and paper technology at The Institute of Paper Chemistry, Appleton, Wisconsin.

Graduating from Massachusetts Institute of Technology in 1907, Mr. Wells served as assistant chemist for the Central Aguirre Company of Porto Rico and as chemical engineer for the Mead Pulp and Paper Company in 1909. He then accepted an appointment as engineer in the Forest Products Laboratory, Madison, Wisconsin, where he remained until 1925, with the exception of the year 1916-17 when he was assistant superintendent and chemist for the Chesapeake Pulp and Paper Company.

During his association with the Forest Products Laboratory, he was interested in many phases of pulp and paper making, including the de-inking of waste paper, development of semi-chemical pulping processes, pulping of southern woods and the application of the rod mill to pulping and bleaching operations.

In 1925, he left the Madison laboratory to become director of the Paper Mill Laboratories, Inc., Quincy, Ill., where he remained until 1930. Here, he was able to develop an odorless egg-case filler board.

Sidney D. Wells

He was technical director of Nekoosa-Edwards Paper Company from 1930 to 1932 and technical advisor for Combined Locks Paper Company from 1932 to 1935. At the latter firm he perfected a method of de-inking ground-wood papers. For the last three years he has been a member of the consulting firm of Paulson and Wells, located at Appleton, Wis.

HENRY W. STOKES

Henry W. Stokes, former president of the American Paper & Pulp Association, and first chairman of the Import Committee of the American Paper Industry, passed away suddenly on Wednesday, November 30, at his home at Media, Pa., a suburb of Philadelphia.

Mr. Stokes, who was 71 years of age, became treasurer of the York Haven Paper Company, at York Haven, Pa., in 1887, soon after his graduation from Haverford College. He became president of the company in 1909, in 1918 became president of the Wrapping Paper Manufacturers' Association, a position he held for ten years, despite his presidency of the American Paper and Pulp Association from 1923 to 1925. He was deeply interested in charitable work, and since retiring from the paper industry in 1929 has devoted much of his time to the Sleighton Farm School for Girls at Delaware, Pa., and the Rush Hospital for Consumptives.

Season's Greetings:

THE approach of Christmas reminds us again most pleasantly of friends both near and far. Those whose cooperation and loyalty have guided us in the past, and now inspire us for the coming year.

. . . To You All, the Makers of TENAX FELTS extend these greetings:

A Merry Christmas and a Happy and Prosperous New Year

LOCKPORT FELT COMPANY
NEWFANE, N. Y., U. S. A.

MISCO "C"
THE CORROSION RESISTANT ALLOY
CAST • ROLLED • FABRICATED
for all equipment exposed to corrosion by sulphite acids
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Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of
PULP AND PAPER MILLS
AND OTHER INDUSTRIAL PLANTS
STEAM AND HYDRO-ELECTRIC
POWER PLANTS
DAMS AND OTHER HYDRAULIC
STRUCTURES

"READY DRESSED" **MILL COGS**
LABOR SAVING—TIME SAVING
THE MOST ECONOMICAL FILLING THAT CAN BE PUT IN A MORTISE WHEEL
Ready Dressed

Blank Head
WE MAKE ANY STYLE OR SIZE WANTED
WRITE FOR INSTRUCTION SHEET "O" WHICH IS FREE
QUICK SERVICE ON ALL SIZES
THE N. P. BOWSHER CO., South Bend, Ind.

TRIMBEY MACHINE WORKS
GLENS FALLS, N. Y.
Knotters — Pulp Screens — Float Valves — Consistency Regulators —Weight Regulators—Color and Alum Meters—Metering Systems

DRY PAPER EVENLY
STICKLE AUTOMATIC STEAM CONTROLS
DRAINAGE SYSTEMS FOR DRYERS AND HEATING SYSTEMS
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STEAM TRAPS, OIL AND STEAM SEPARATORS
STICKLE STEAM SPECIALTIES COMPANY, 2217 VALLEY AVENUE, INDIANAPOLIS, IND.

NECROLOGY

WILLIAM P. GARGAN

Associated with Goulds Pumps, Inc., for over thirty years, William P. Gargan passed away on November 1 at the age of 53. At the time of his death he was assistant chief engineer of the Seneca Falls (N. Y.) pump firm, having been promoted to that position in 1929.

Mr. Gargan had a wide circle of friends in the paper industry, a large share of his time having been devoted to the pumping problems of the industry. He was also widely known for a number of his articles which appeared in the trade literature.

◆

JOSEPH K. CASS

Long associated with the paper industry, Joseph Kerr Cass, chairman of the board of directors of the West Virginia Pulp and Paper Company, passed away November 1 at the age ot 90.

Mr. Cass was born at Coshocton, Ohio, the son of Dr. Abner Lord Cass and Margaret Kerr Cass, and a descendant of John Cass, an Englishman who settled at Hampton, N. H., in 1644.

Graduating from Kenyon College in 1868 he began work as a surveyor for the Michigan Central Railroad. He was connected with the Pittsburgh, Fort Wayne and Chicago road from 1872 until 1876 when he became a partner in the Morrison, Bare & Cass Paper Company. The title of the latter firm was changed in 1881 to the Morrison & Cass Paper Company with mills at Tyrone, Pa., where Mr. Cass spent the most active part of his life. Mr. Cass was president of the firm until 1889 when he became a director of the West Virginia Pulp and Paper Company after a merger. Mr. Cass celebrated his ninetieth birthday on October 10.

Surviving Mr. Cass are his son, a daughter and his sister.

◆

HARRY P. GOULD

Well-known throughout the paper industry, Harry P. Gould, president of the Gould Paper Company, Lyons Falls, N. Y., passed away November 4 after an illness of about a year's duration.

Mr. Gould was president of the Donnacona Paper Company for many years until this concern was sold to Canadian interests. At one time he was secretary of the St. Regis Paper Company which was, at the time, controlled by the Goulds. When Mr. Gould was 21 years of age he became a stockholder in the Gould Paper Company and at 30 he was made a director. In 1909 he became secretary of the company and served in this position until 1919 when upon the death of his father, he became president and treasurer.

Surviving Mr. Gould are two sons and a sister.

◆

▶▶▶ *J. W. Behrman,* secretary and purchasing agent of the Lewellen Manufacturing Company, Columbus, Indiana, passed away recently. He had been with the Lewellen company since 1919.

◆

LEWIS M. BOOTH

For twenty years president of the Booth Chemical Company, Elizabeth, N. J., Lewis Miller Booth, widely-known throughout the paper industry as an authority on water softening, passed away November 6 at his home in Plainfield, N. J.

Mr. Booth became an authority on water softening in his early days in business and the reputation he gained as an expert in this line brought him nation-wide recognition in the paper manufacturing industry. He had, in recent years, been called as a consultant to all parts of the United States and Canada.

Mr. Booth was a charter member of the Technical Association of the Pulp and Paper Industry and held many patents in connection with his work in the United States, Canada, Germany and Holland. He frequently wrote on the subject of water softening for technical papers. He was a graduate of Swarthmore College and a member of Delta Upsilon fraternity. He was also a member of Sigma Xi, a graduate scientific society.

Surviving Mr. Booth are his widow, three children and a brother and sister.

◆

▶▶▶ *Leslie Appleford,* president and general manager of the Consolidated Sales Book and Wax Paper Company, Ltd., Hamilton, Ontario, passed away recently at his home in Port Nelson after a long illness. He was sixty-five years of age and is survived by his widow, one son and four daughters.

◆

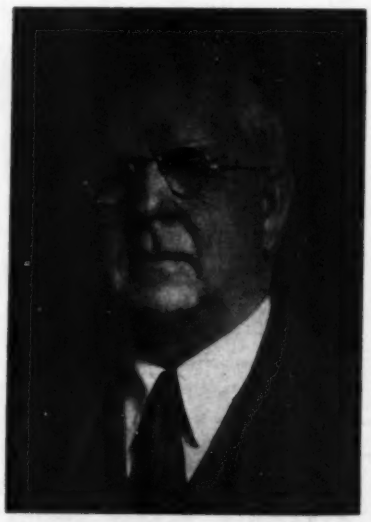
FRANCIS C. HUYCK

Francis Conkling Huyck, chairman of the board of F. C. Huyck & Sons, Albany, N. Y., passed away recently at the age of 64 after a short illness.

Mr. Huyck was the son of the founder of the Huyck organization and had been associated with the firm since 1898, having entered the mill upon graduation from Williams College. Mr. Huyck was active in civic and fraternal organizations for decades, in addition to his business activities.

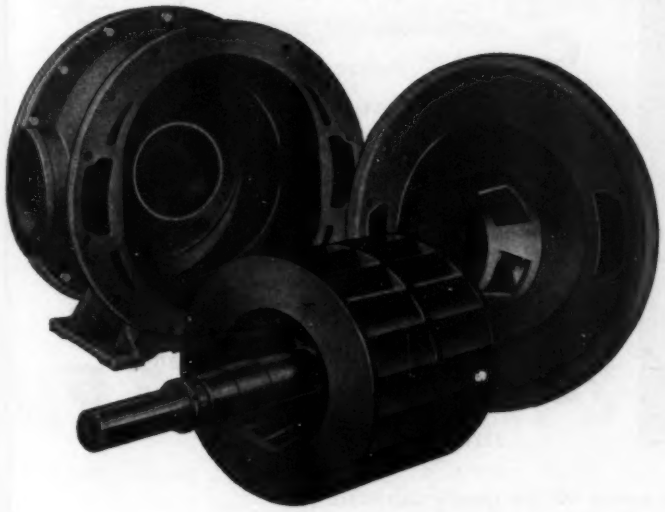
Surviving Mr. Huyck are his widow, a son and a daughter.

Joseph K. Cass



Francis C. Huyck

SIMPLICITY! NASH VACUUM PUMPS HAVE ONE MOVING PART



Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

Vacuum produced by a Nash Pump is non-pulsating without equalizing tanks. Liquid entering the pump does no harm, even in slugs. Reliability and durability are inherent in the simple Nash construction, and these qualities are assured by superior material and workmanship.

THE NASH ENGINEERING COMPANY

SOUTH NORWALK, CONNECTICUT, U. S. A.

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

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ELIXMAN

CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with re-enforced square hole. This patented feature of re-enforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted.

ELIXMAN PAPER CORE COMPANY, Inc.
CORINTH, N. Y.

Facts About Accidents in the Paper & Pulp Industry

Interesting and Valuable!

What were the outstanding facts about accidents in the Paper & Pulp Industry during 1937? How did they compare with other industries? How did your plant's record compare with others?

These and many other revealing and important data are presented in detail in "1937 Accident Rates In the Paper & Pulp Industry", recently published by the National Safety Council. We'll be glad to send a copy FREE to any Safety Director or other plant executive upon request. Simply drop us a line on company letterhead.

Contents . .

Outstanding Facts
Comparison with other Industries
Experience by Type of Industry
Experience in various types of Mills
Experience in various Departments
Causes of Serious Accidents
Disabling Injuries by Industrial Groups
Types of Accidents
Best All-Time Records
Individual Plant Records

PAPER & PULP SECTION NATIONAL SAFETY COUNCIL
TWENTY NORTH WACKER DRIVE CHICAGO ILL.

ON 3 POINTS

WARREN PUMPS COST LESS TO OPERATE & MAINTAIN

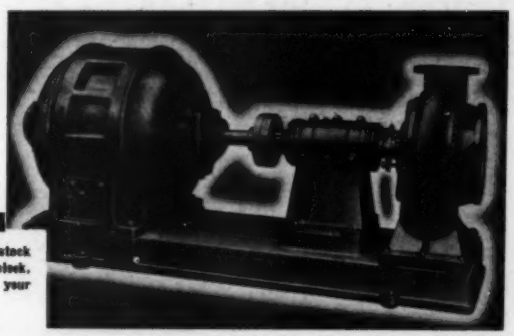
1 Warren pumps have liberal clearances between impeller and case rings to prevent wear, maintain original efficiency over long periods, keep power consumption down year after year.

2 Extra heavy shafts prevent vibration and deflection—over-size bearings keep pressures low, cut replacements—large stuffing boxes are easily accessible, speed inspection and maintenance.

3 Most important, Warren pumps save by sticking with the job under all circumstances. Good details make good pumps. In Warren details are the reasons Warren pumps do their job long and well. Bring your pumping problems to Warren.

WARREN PUMPS

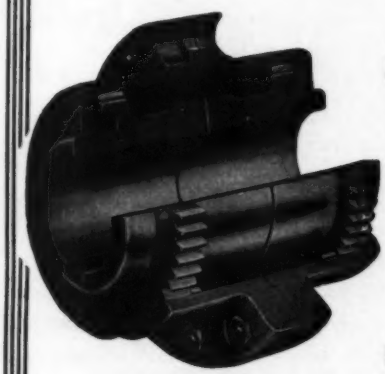
Warren Steam Pump Co., Inc., Warren, Mass.



The self-cleaning, non-binding impeller in Warren stock pumps keeps heavy stock on the move, round the clock, month after month. Weigh this feature carefully on your stock handling problems.

POOLE

FLEXIBLE COUPLINGS



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BALTIMORE, MD.

CLEANING
Fourdrinier wires
SAFELY

WIRE cleaning with Oakite materials is speedy and thorough. But that's only half the story! For when you know the SAFETY of Oakite cleaning . . . when you discover how the life of wire is prolonged and safeguarded by harmless Oakite action . . . then you'll understand why so many mills insist on doing this important job the Oakite way.

Oakite cleaning can help *you* lower wire replacement costs. It can help you save time and money, too. Write for full information. No obligation.

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OAKITE *certified* **CLEANING**
MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT

CURRENT MARKET QUOTATIONS

RAGS (Domestic)
f. o. b. New York City

NEW RAGS

	per cwt.
Blue Overalls	4.75 to 5.00
Corduroy	2.25 to 2.50
Cottons—	
Washables, No. 1	1.85 to 1.75
Fancy Percales	3.00 to 3.25
New Soft Blacks	3.50 to 3.75
New Light Seconds	1.60 to 1.75
New Dark Seconds	1.50 to 1.60
Khaki Cuttings—	
Mixed	3.25 to 3.50
O. D.	3.75 to 4.00
New Canvas	7.00 to 7.25
New Mixed Blacks	2.25 to 2.50
Shirt Cuttings—	
New White No. 1	6.75 to 7.00
Silesias No. 1	4.50 to 4.75
New Unbleached	6.60 to 6.75
Fancy	2.25 to 2.50

RAGS (Domestic)
f. o. b. New York City

OLD RAGS

	per cwt.
Roofing—	
No. 1	1.10 to 1.15
No. 2	.90 to .95
No. 3	.80 to .85
Twos and Blues—	
Repacked	1.40 to 1.60
Thirds and Blues—	
Repacked	1.15 to 1.25
Miscellaneous	1.00 to 1.10
White, No. 1—	
Repacked	3.00 to 3.25
Miscellaneous	2.25 to 2.50
White, No. 2—	
Repacked	1.75 to 2.00
Miscellaneous	1.25 to 1.50

RAGS (Foreign)
ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings	2.25 to 2.50
New Mixed Cuttings	2.00 to 2.25
New Light Silesias	4.25 to 4.50
Light Flannelettes	4.50 to 4.75
Unbleached Cuttings	6.75 to 7.00
New White Cuttings	7.00 to 7.25
New Light Oxfords	4.00 to 4.25
New Light Prints	3.00 to 3.25

RAGS (Foreign)
ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	7.00 to 7.25
No. 2 White Linens	6.00 to 6.25
No. 3 White Linens	4.50 to 4.75
No. 4 White Linens	3.00 to 3.25
No. 1 White Cottons	4.00 to 4.25
No. 2 White Cottons	3.25 to 3.50
No. 3 White Cottons	2.50 to 2.75
No. 4 White Cottons	2.00 to 2.25
Extra Light Prints	2.25 to 2.50
Ord. Light Prints	1.75 to 2.00
Med. Light Prints	1.45 to 1.75
Dutch Blue Cottons	2.00 to 2.25
French Blue Cottons	2.25 to 2.50
French Blue Linens	2.75 to 3.00
Checks and Blues	1.75 to 2.00
Linsey Garments	1.50 to 1.60
Dark Cottons	1.15 to 1.25
Old Shopperies	1.00 to 1.10

ROPE and BAGGING
f. o. b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	2.15 to 2.25
Domestic	1.90 to 2.00
Wool Tares—	
Light	1.70 to 1.80
Heavy	1.90 to 2.00
Bright Bagging	1.60 to 1.70
Manila Rope—	
Foreign	2.90 to 3.15
Domestic	3.00 to 3.25
New Burlap Cuttings	2.25 to 2.40
Jute Threads—	
Foreign	2.75 to 3.00
Domestic	3.00 to 3.25
Strings—	
Sisal	1.50 to 1.60
Soft jute	1.75 to 1.85
Mixed	.50 to .60

WASTE PAPER
f. o. b. New York City

	per cwt.
Shavings—	
White Envp. Cuttings	2.40 to 2.50
Ord. Hard White No. 1	1.75 to 2.00
Ord. Soft White No. 1	1.60 to 1.75
Flat Stock—	
Stitchless	.75 to .80
Overissue Mags	.65 to .70
Solid Flat Book	.55 to .60
Crumpled No. 1	.45 to .50
Solid Ledger Books	1.30 to 1.40
Ledger Stock—	
White	1.10 to 1.20
Colored	.65 to .75
New B. B. Chips	.15 to .20
Manilas—	
New Env. Cuts	1.50 to 1.60
New Cuttings	1.30 to 1.40
Bogus Wrappers	.15 to .20
No. 1 Old Kraft	.55 to .65
News—	
No. 1 Wh. News Cuttings	1.30 to 1.40
Strictly Overissue	.40 to .45
Strictly Folded	.30 to .35
No. 1 Mixed Paper	.12½ to .17½

CHEMICALS
f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt.	3.40 -
Ground, cwt.	3.15 -
Powdered, cwt.	3.55 -
Blanc Fixe—	
Bulk, ton	42.50 to 45.00
Barrels, pound	.0350 to .0375
Bleaching Powder—	
Drums, cwt.	2.00 to 2.25
Casein (Domestic Standard)—	
Ground (bags), lb.	8.50 to 9.00
Fine grd. (bags), lb.	9.00 to 9.50
China Clay—	
Domestic Filler	
Bulk (mine) ton	6.50 to 12.00
Domestic Coating	
Bulk (mine) ton	11.00 to 20.00
Imported (ship side)	
Bulk (lump) ton	14.50 to 24.00
Chlorine—	
Tank cars (wks) cwt.	2.15 to 2.55
Gelatine (silicin) lb.	.42 to .44
Glyc. (C.P.) drums, lb.	.1250 to .1300
Litharge, bbl., lb.	.07 to .0725
Rosin (Gum)—	
New York, 280 lb. barrel	
E, per bbl.	5.30
F, per bbl.	5.50
G, per bbl.	5.55
WW, per bbl.	7.77
Rosin (Wood), per bbl., carlots	4.85
Salt Cake—	
Dom. bulk (wks) ton	12.00 to 13.50
Imp. bulk on dock—	
(Atl. ports) ton	14.50 to 15.00
Soda Ash—	
Bulk (works) cwt.	.90 to .95
Paper Bags, cwt.	1.05 to 1.30
Barrels, cwt.	1.05 to 1.30
Soda (Caustic)—	
Solid, drums, cwt.	2.10 to 2.30
Ground and flake, drums, cwt.	2.50 to 2.70
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1.65 to 2.00
40 deg., 35 gal. drums, (works) cwt.	.80 to 1.20
Starch—	
Pearl, 140 lb. bags, cwt.	2.80 -
Pearl, barrels, cwt.	2.75 -
Paper (Sp.) bags, cwt.	2.60 -
barrels, cwt.	2.85 -
Sulphur (crude)—	
(mine) bulk, ton	16.00 to 19.00
Talc—	
Dom. 100 lb. bags (mine) ton	14.00 to 18.00
Imp. bulk, ton	35.00 to 40.00
Titanium Dioxide—	
Ba. Fig., bbls., lb.	.05½ to .06½
Ca. Fig., bbls., lb.	.05½ to .06½
Zinc Sulphide, bbls., lb.	.09 to .095

CHEMICAL PULP
(Air-dry ton)

	per ton
Soda (Dom.) def'd. mill—	
Bleached	2.55 -
Sulphate (Dom.) f. o. b. mill—	
Bleached	2.50 to 2.75
Kraft No. 1	2.00 to 2.25
Kraft, Southern, del.	1.75 to 2.00
Sulphate (Imp.) on dock—	
Bleached	2.50 to 2.75
Kraft No. 1	1.65 to 1.85
Kraft No. 2	1.55 to 1.65
Sulphite (Dom. & For.) On dock—	
Prime bleached	2.50 to 2.75
Prime easy bleach.	2.15 to 2.40
Prime strong unbl.	1.90 to 2.15

MECHANICAL PULP
(Air-dry ton)

	per ton
No. 1 Dom. & Can. (f. o. b. mill)	19.00 to 22.00
No. 1 Imp. (On dock)—	
Moist	25.00 to 26.00
Dry	24.00 to 25.00

PAPER
f. o. b. New York City

	per ton
Boards—	
Binders	71.00 to 77.00
Chip	27.50 to 30.00
Chip, agl. mla. lined	42.50 to 45.00
Coated, white patent .016	60.00 to 65.00
.020 and heavier	55.00 to 60.00
Kraft liner	42.50 to 45.00
News	27.50 to 30.00

	per cwt.
Book (cased)—	
No. 1 Glossy Coat	10.50 to 12.50
No. 2 Glossy Coat	9.25 to 10.75
No. 3 Glossy Coat	8.15 to 9.50
No. 4 Glossy Coat	7.65 to 9.00
No. 1 Antique	7.65 to 9.00
No. 2 Offset	7.00 to 8.25
A Grade E. F.	6.80 to 8.00
A Grade Super	7.05 to 8.25
B Grade E. F.	6.25 to 7.50
B Grade Super	6.50 to 7.75
C Grade E. F.	6.00 to 7.00
C Grade Super	6.25 to 7.25
D Grade E. F.	5.70 to 6.75
D Grade Super	5.95 to 7.00
Ivory & India	.50 cwt. extra
Bonds (Rag Content)—	
100% Rag	
Ext. No. 1	39.10 to 46.00
100% Rag	31.05 to 36.50
85% Rag	
75% Rag	23.60 to 27.75
65% Rag	20.50 to 25.00
50% Rag	17.55 to 21.50
25% Rag	14.65 to 17.75
Regular Colors	1.00 cwt. extra
Heavy Colors	3.00 cwt. extra
Bonds (Sulphite)—	
No. 1	8.20 to 10.00
No. 2	7.30 to 9.00
No. 4	6.45 to 7.75
Colors	1.00 cwt. extra
Glassine (f. o. b. mill)—	
Embossed (25 lb. up)	12.25 -
Bleached (25 lb. up)	11.25 -
Unbleach (25 lb. up)	9.50 -
Greaseproof—	
Bleach. (25 lb. up)	9.20 -
Unbleach. (25 lb. up)	8.75 -
Ledgers (Rag Content)—	
100% Rag	
Ext. No. 1	40.25 to 47.25
100% Rag	32.20 to 37.75
85% Rag	29.90 to 35.00
75% Rag	24.75 to 29.00
65% Rag	21.65 to 26.25
50% Rag	18.70 to 22.75
25% Rag	15.80 to 19.25
Regular Colors	1.00 cwt. extra
Heavy Colors	3.00 cwt. extra
Ledgers (Sulphite)—	
No. 1	9.35 to 11.50
No. 2	8.50 to 10.25
No. 4	7.00 to 9.25

	per ton
News—	
Rolls (Contract)	50.00 -
Rolls (Spot)	(nominal)
Sheets	58.00 -

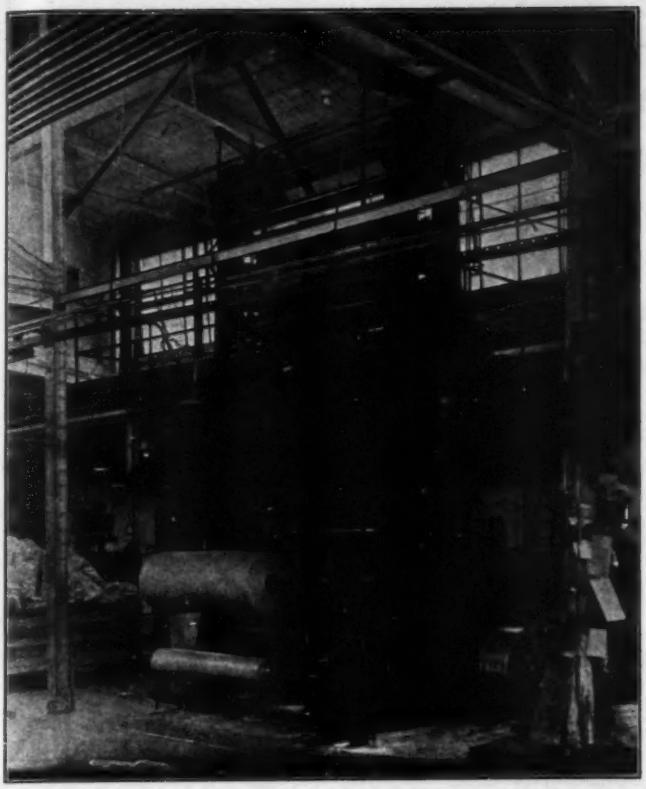
	per ream
Tissues (Carlots)—	
Anti-Tarnish M. G.	.75 -
Colored	.875 -
Kraft	.75 -
Manila	.60 -
Napkins, semi-crepe (12¾ lb. to M shts.) per cs.	.45 -
Napkins, full crepe and emb'sed (12¾ lb. to M shts.) per cs.	.52 -
Toilet, Bleached (M shts.) per cs.	5.80 -
Toilet, Unbleached (M shts.) per cs.	3.25 -

	per case
Towels—	
Bleached	3.10 to 3.65
Unbleached	1.95 to 3.30

	per cwt.
Wrappings (Kraft)—	
Extra Quality	4.75 to 5.25
Super-Standard	4.12½ to 4.62½
Northern Standard	4.00 -
Southern Standard	3.37½ to 3.50

Wrappings (Sulphite and Bleached Kraft)—
(Rolls, f. o. b. mill)

	per cwt.
Bleached papers—	
M.F. & M.G. Waxing, 20 lb. (Carloads only)	5.75 -
(10,000 lbs.)	6.00 -
Drug wrapp. 35 lb.	6.00 -
Unbleached Papers—	
Com. Grd. Butch. 40 lb.	4.25 -
No. 1 Butchers	4.50 -
No. 1 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	4.875 -
No. 2 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	4.625 -
Steam Finish, 50 lb.	3.625 -
Water Finish, 40 lb.	4.25 -
Manilas—	
Envp. Mla., Sub. 16-40 (No. 1)	4.75 -
Envp. Mla., Sub. 16-28 (No. 2)	4.50 -
Envp. Mla. (Prices based on large sheets untrim'd ream-marked, in bdls.)	
Wrapp. Mla. 35 lb. up—	
No. 1	5.00 -
No. 2	4.75 -
M. G. Sulphite (other than Waxing)	
Grade A-25 lb.	5.00 -
Grade B-25 lb.	4.75 -



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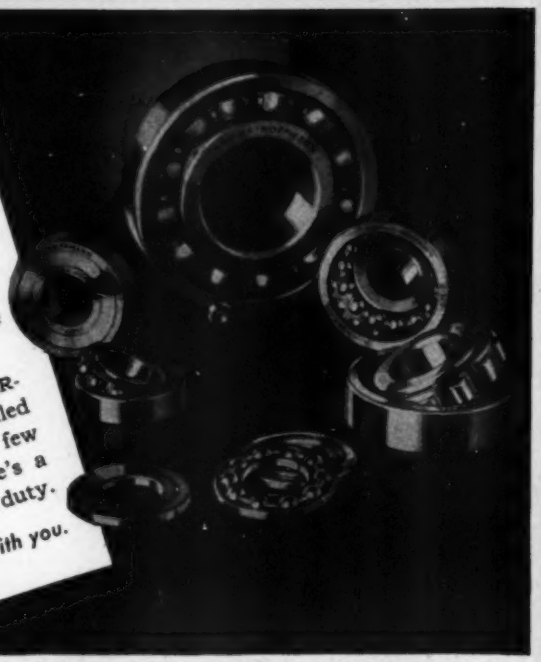

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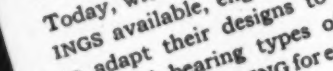

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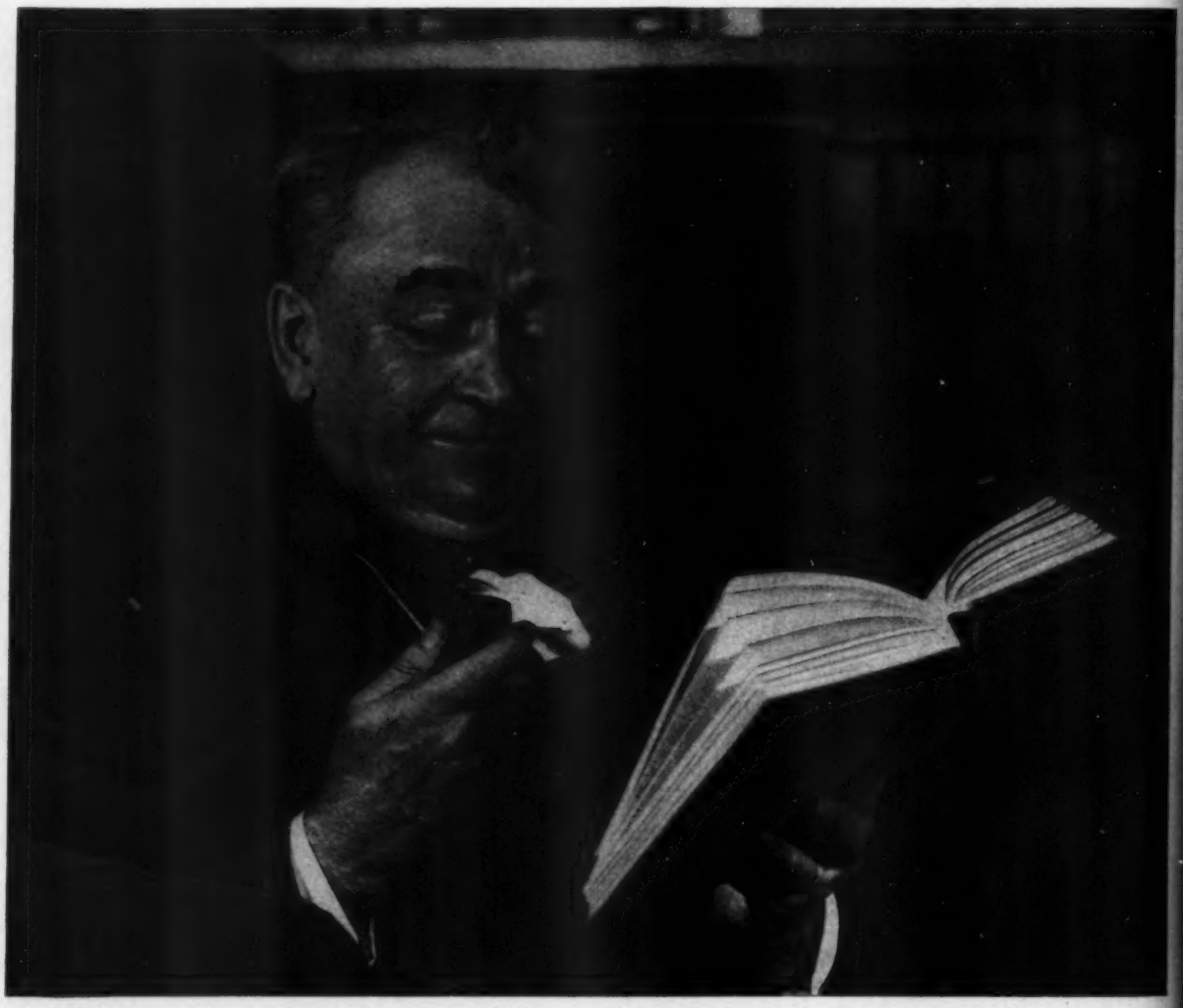

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